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EMERITUS PROFESSOR OF PHYSIC IN THE UNIVERSITY OF CAMBRIDGE; CONSULTING PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL

THE personality of every great man has a certain impact on his own generation, but when Thomas Hobbes said that Harvey was the only man who had seen his theories accepted during his lifetime he must have been thinking of the younger generation which had grown up since the theory became known. For the men of Harvey's own standing were never convinced. Questions that we know were put to an unsuccessful candidate for the licentiateship in 1632 prove that his discovery had not yet been accepted by his colleagues. Nevertheless had his biography been written in the vogue now only too prevalent of searching for what was called "the real man," which means a hunt for his failings, Harvey would have emerged from the ordeal very well, and it would still have to be allowed that he profoundly influenced physiology, if not medicine, for the rest of the century. Mr. Wilfred Trotter said of John Hunter:

> "It needs all our imaginative sympathy to picture the twilit country in which his labours were carried on—the air is dim and thick, the range of vision short, the appearance of things ambiguous. . . ."

This is even truer of Harvey, but as Mr. Trotter pointed out, Hunter's influence was more limited to the indirect and germinal while every student of physiology is in some sense the beneficiary and direct legatee of Harvey.

I do not aspire to paint yet another portrait of Harvey, for the hastiest perusal of the orations will prove how well that has been done, but to try to picture something of his background, in the hope that thereby I may do something to make his figure stand out more clearly against it. Not so much the physical background of Cambridge, Padua, St. Bartholomew's, and this college as the background of the thought of his time. An ambitious task, but it has always interested me to inquire why men thought what they did when they did. And this shall be my offering to a great name. I am the more encouraged to make this attempt because for reasons I hope to analyse, the seventeenth century has a topical interest for us to-day. Different ages have been interested in different epochs: our fathers were interested in the Renascence, the Renascence was interested in the classical age; to-day we seem to be rounding off a school of thought that was born in the seventeenth century, and so we turn back to inquire, why did men think what they did then?

We are learning that the dark ages were not so dark as they were painted. The marvellously rapid flowering of the Renascence tends to blind us to the subtle changes that were occurring before. Sometimes there comes a spring so early in the year that we fear the return of a frost that will nip the incautious buds. Something of that sort happened in Europe in the thirteenth century. There was a stir in the air. True there had already been a revival of architecture, but now a new and delicate art was being revealed by such men as Duccio and Giotto. A new attitude to the world, a frank love of nature, of life in all its manifestations made its appearance. I like to think it was due to St. Francis of Assisi. His example certainly inspired Giotto to his earliest creative efforts, and the Franciscans were the first scientific investigators of this new age. For when man begins to wonder he desires to investigate. Was not Roger Bacon, the father of English natural science, a Franciscan?

And then came the frost, and the icy fetters of theological authority imposed a return of winter. Roger Bacon languished in prison for many years and no attempt was made to revive any interest in experiment until the days of his greater namesake. The impulse towards a newer freer attitude to life was nipped in the bud and had to throw down deeper roots before again emerging. One great and permanent gift remained—the universities.

The Renascence was late in reaching England. Even in France it was unknown till 1494 and the first Renascence architecture in England is to be found in a chantry dating from 1500 in Christchurch Minster. Consequently we are in this country a little apt to overstress the part played by the new learning, the new writing, and the new world in producing that wonderful efflorescence. Its inner essence remains as mysterious as the springing of youth into adolescence, and these events had found a soil already fertilised as the work of Donatello, Fra Angelico, and Luca della Robbia testified. It has been said somewhat sardonically that at Cambridge, "learning like a stranger came from afar" in the person of Erasmus in 1510. Eight years after that Thomas Linacre founded this college, and two years later his lectureships at Oxford and Cambridge, while in 1540 Henry VIII. founded the regius professorships there. With such a splendid start it may seem strange that the immediate results were disappointing. Yet on inquiry it is not so surprising. For the aim was to revive the old medical learning. It was authoritarian. Medical teaching at the universities consisted in the reading and expounding of Hippocrates and Galen, and in this college in 1559 John Geynes was cited for impugning the infallibility of Galen. Not until he had humbly recanted was he admitted to our fellowship in the following year. Something more was needed than the revival of the old; a new spirit was required to make these dry bones live. It seems paradoxical that the reign of Mary Tudor should have indirectly contributed to this desirable end, but those who fled then to Geneva, Frankfort, and Strasbourg returned on Elizabeth's accession, bringing with them a wider culture than England had previously known. But that new spirit found clearest expression in Francis Bacon's "Novum Organum." In these days when every week some book is proclaimed as epoch-making, it sounds jejune to apply this epithet to a work which showed the way to the investigation of the world of phenomena. Projected in his youth, it was prepared by a series of sketches, revised and rewritten at least twelve times, and finally published in 1620.

Men did not realise its portent at once. Even Harvey was mildly scoffing at his distinguished patient's philosophy though he admired the man. Yet as Sir William Hale-White clearly showed in his oration, he must have been deeply influenced by it. Just so, though more openly, men scoffed at Darwin, Lister, and Freud, only to find themselves, a few years later, utilising their ideas and their methods.

* The Harveian Oration delivered before the Royal College of Physicians of London on Oct. 19th, 1936.

Why does this history repeat itself so inevitably? Because "there can be no approach to truth without some threat to the thinker's personality" (Trotter). The dogmatic rationalism of the scholastics had produced a system which claimed to give a coherent and consistent account of nature, of man, of the spiritual world, and of any other kind of world which might be supposed to exist. Why trouble to look further, why explore an uncharted sea? The unknown might change us, shake us out of our comforting certainties. Without curiosity there can be no science.

Into this dusty atmosphere of scholasticism FRANCIS BACON came like a breath of fresh air, declaring that we are not spiders to go on indefinitely spinning cobwebs out of ourselves. He praised the more excellent way of the bee, which gathers its material from the flowers of the garden and of the field, but digests it and transforms it by a power of its own. Though much of it appeared in his earlier works, the "Novum Organum" contains the fruit of his thought, and I cannot resist the temptation to distill a little of its essence by paraphrase and quotation. In only a few ages had the conditions been favourable to the development of science he said—"in times, no less than in regions there are wastes and deserts." He maintained that the science of his day was not a method of invention while the prevalent logic merely fixed errors founded on popular notions.

> "What a man had rather were true, he more readily believes. . . . Numberless are the ways, and sometimes imperceptible, in which the affections colour and infect the understanding. . . . We must begin anew from the very foundations. . . . The understanding must not be supplied with wings, but rather with weights to keep it from leaping and flying. . . . Noble inventions may be lying at our very feet and yet mankind may step over without seeing them."

In well-known phrases he goes on to impeach *the idols of the tribe*, or the deceptive tendencies inherent in the minds of all men; *the idols of the cave* that belong not to the race but to the individual; *the idols of the market place*, whereby men are governed by words rather than by facts; and *the idols of the theatre* (if we said "lecture theatre" his meaning would be clearer) due to the authority of philosophical systems and perverted rules of demonstration. He joins hands with certain modern philosophers in declaring that the mind of man supposes more order and regularity in the world than it can actually find, and Harvey's somewhat similar pronouncement may well have been derived from that source.

Bacon never claimed to have originated the method of induction, which he freely attributed to Plato. But so great a stimulus did he give to its employment that it may seem strange that his plan for the renewal of the sciences has never been deliberately followed in its entirety by others. Two, perhaps three, flaws in it may offer a partial explanation. In the first place the defects in his own scientific equipment led to a certain crudity in his conceptions of nature, which gives some justification for Harvey's scoff that Bacon "wrote philosophy like a Lord Chancellor." In the second place he claimed that his way of discovering sciences went far to level man's wits and left little to individual excellence. Never was there a greater fallacy. It leaves out of consideration the scientific use of the imagination. Fabricius had observed the valves in the veins, but regarded them as pockets designed to catch blood that would otherwise have collected in the extremities. Robert Boyle tells us that Harvey saw a tiny but momentous flaw in the argument. For he observed that the veins to the head also had their valves set towards the heart. There was the germ which cultivated by his scientific imagination flowered into his immortal discovery. Pasteur said that chance only visits the mind that is prepared. Although Darwin claimed to have worked on true Baconian principles, he wrought better than his master knew, for his collection of instances was guided by a hypothesis of which the validity could be tested. No one who has had to disburse the endowments for research can accept the view that the scientific method levels men's wits.

In the third place when Bacon said "I only sound the clarion, but I enter not into the battle," he deprived himself of the crucial test of his own method. He did as a matter of fact carry out a few experiments, one of which was fatal, for on a wintry day in March, 1626, he caught the chill which ended his life while stuffing a fowl with snow to see if cold would delay putrefaction. It was probably this scant practical experience which led him to slight William Gilbert's work, a more careful study of which would have saved him from some errors. Gilbert was "the first real physicist and the first trustworthy methodical experimenter" and we are proud that he, who influenced Harvey, was a president of our college.

Nevertheless Bacon "did more than anyone else to help to free the intellect from preconceived notions." In his own words he pointed the way to "a new and unexplored kingdom of knowledge within the reach and grasp of man, if he will be humble enough and patient enough to occupy it."

But he was notoriously a better guide in science than in morals, and it is impossible to understand seventeenth century thought without taking into account its preoccupation with morals. At the Renascence men felt released from the moral and religious codes which had bound them for centuries; they believed that they could reap where they had not sown. The subtle awakened intellects appreciated the advantage of brain over brawn and proceeded to exploit the simpler minded. Caius even came to doubt the wisdom of his benefactions and of his support to the new learning. However, the reign of the Machiavellis was not unchallenged for long. Morality would keep breaking through. Over this line of cleavage Shakespeare brooded. A new sensibility was being born and he was conscious of a note of irresolution. He realised that the Mercutio of the south was giving way to the Hamlet of the north. Unlike Dante who was always a judge, Shakespeare was a recorder. It takes a poet to plumb a poet's mind, and it was John Keats who put his finger on one of Shakespeare's greatest characteristics, his capacity for "being in uncertainties, mysteries, doubts, without any irritable reaching after fact and reason."

The age had been one of frantic activity. England had experienced every stimulant: wild adventures in the ends of the earth, threats of destruction from abroad, constant plots within. Now it was beginning to sober down. Though Shakespeare could remain with his mind in suspense, his fellows could not. They wanted facts. Again the cry arose "What is Truth?" but this time the jesting Pilates stayed for an answer. "The climate of opinion" is a happy phrase we owe to Joseph Glanvill, of Scholar Gipsy fame. How did men comport themselves in the new climate that was surrounding them? According to their kind: some simply looked back with bitter regret, others

forward with eager anticipation, some imitated Mr. Facing-both-ways.

RICHARD BURTON looked back. He was a scholiast born out of due season, and grew old in an age he condemned. Like the melancholy Jaques in many ways, he had a melancholy of his own, compounded of many simples indeed, for his "Anatomy" is a mosaic of quotations. Mark Pattison described the typical scholastic attitude thus, "If a great writer has said a thing, it is so." It reminds one of case-made law, always so foreign to the medical mind. But the authoritarian note was no longer acceptable in the new atmosphere and Burton felt that by any human standard the entire order of the universe was irrational. It has been said that he was filled with hatred, scorn, and derision for the whole scheme of things in which he found himself. What could one do, he protested with tears in his eyes, but laugh? Touchstone and Jaques in one.

JOHN DONNE, the famous Dean of St. Paul's, on the other hand, illustrates alike in his life and thought the transition from the sixteenth to the seventeenth century. He was "in certain aspects of mind and training the most mediaeval, in temper the most modern of his contemporaries." As Mr. John Sparrow wrote with deep insight, while still only a schoolboy at Winchester, "despite all vicissitudes of fortune, despite even the apparent changes in his character, Donne himself was always essentially the same. . . . There are two ways of arriving at the pitch of emotion necessary for the production of such writings as Donne's. One is the absolute surrender to pleasure, and the sacrifice of the ordinary standard of morals; the other is the complete banishment of pleasure, and the consistent living up to an ideal. Donne adopted both of these . . ." and "there lingers about him something unexorcised as if Pagan incense were burning in a Christian crypt."

Brought up a Roman Catholic, he had become Anglican by the time he was 24, but his steps to the altar were somewhat devious and faltering. He was worldly and time-serving, ascetic and devout, with equal sincerity. He stood haughtily apart from his contemporaries except Ben Jonson, for he had the scornful indifference of the innovator, regarding himself as destined to inaugurate a new era. He revolted against the conventional and classical imagery of the Renascence, and was as determined to break it up as Wordsworth was to release poetry from Miltonic diction, when it had become outworn through sedulous imitation. Donne experimented with prosody and rhythm like our own Laureate fellow, Robert Bridges. It is significant that there has been of late a great revival of interest in Donne, just as there has been in El Greco. The writings of one have affinity with the paintings of the other. Both can be ascetic and devotional, just as they can be distorted, startling, and bizarre. This reawakened interest is comprehensible if I am correct in my thesis that certain trends of the seventeenth century are reasserting themselves to-day. "Every young poet to-day would like to write like Donne; intensity is the most admired of all qualities. Yet—and there's the rub—so few know what to be intense about—except negative attitudes" (Desmond MacCarthy). Certain it is that modern poets have abandoned the mellifluous line of Tennyson for a condensed allusiveness, an obscurity, a concentration of thought, an imagery drawn from things of everyday life just as Donne departed from Marlowe's mighty line to the same end. Whether beauty has been served thereby must be left to individual opinion. The modernity of Donne's ideas in some ways is shown by the fact that he wrote an essay in favour of voluntary euthanasia in 1624. The essence of his intimate thought is to be sought, however, in his "Devotions on Emergent Occasions" written during a serious illness. Did any writer ever relish an illness so keenly? It certainly gave opportunity for his self-flagellating temperament and it is entertaining to observe how gratified he was when the King sent his own physician to consult upon his case.

A greater and more sympathetic figure than either Burton or Donne was Sir THOMAS BROWNE. Like a two-headed Janus he looked both back and forwards. To this peculiarity of his temperament one of the fascinations of his style is due, for it will be observed how frequently a classical phrase or allusion is balanced against an Anglo-Saxon word or homely illustration. Moreover this dualism of phraseology is accompanied by a dualism of thought, which he clearly acknowledged when he said, "Thus is Man that great and true Amphibium, whose Nature is dispos'd to live, not only like other creatures in diverse Elements, but in divided and distinguished worlds."

To this point of view modern philosophy is tending. The materialistic science of the nineteenth century is dead, neo-vitalism died with the recent lamented passing of its greatest exponent, and while the mechanistic theory of life is being pushed further than ever, its protagonists gladly admit that at most it can only attain one aspect of the truth. Thus Sir Thomas Browne joins hands with the twentieth century, though the way in which he expresses this attitude of his mind may give one the impression of scepticism hand-in-hand with credulity. As he said, "Where Truth seems double-faced, there is no man more paradoxical than myself," for he had realised that where a fact or opinion previously widely adopted can be tested by experiment and is not proved correct thereby, you should give it up. But where it is not open to experiment or that method has as yet been insufficiently applied, you are at liberty not to give it up and to doubt the wisdom of those who do. Unlike Bacon who rejected hypotheses, he attempted to use them. The particular fact was important in Bacon's eyes, the general principle in Browne's.

Sir Thomas Browne was an honorary fellow of this college, but it is not correct to say, as is often said, that he became a fellow of the Royal Society. The name "T. Browne" modestly squeezed into a corner of their roll is that of his beloved grandson, to whom he wrote such charming letters. It has been stated on Wilkin's authority that Sir Thomas wrote the Harveian Oration for his son Edward to deliver. The Sloane manuscripts contain this oration in Sir Thomas's writing with references to the lecture theatres in different continental universities which Edward had visited, for on this subject, as his father pointed out, he could tell "more than any other is like to say." But as a matter of fact Edward was never Harveian orator. Perhaps with fatherly pride he had expected him to be, and it is unfortunate that he did not live long enough to see his son occupy our presidential chair, which would have more than compensated for any earlier disappointment.

It was Sir Thomas Browne who enriched our language with the word electricity. That he was himself an experimentalist can be seen from his "Miscellaneous Writings." Mr. Geoffrey Keynes says that he "may be justly compared with his contemporary Robert Boyle in his restless curiosity and his use of the

experimental method, though he fell far short of Boyle in his achievement." Dr. Needham however attaches great value to his work on the chemical aspects of embryology which has been quite overlooked, although his originality and genius in this field is hardly less remarkable than in so many others. Harvey's approach to embryology, unlike Sir Thomas Browne's, was in the main morphological, and to-day the biochemical aspect of that subject has pride of place.

On such an occasion as this when we are striving to find "an antidote against the opium of time," Browne's "Urne-Buriall" may strike us with a sudden chill—"The iniquity of oblivion blindly scattereth her poppy, and deals with the memory of man without distinction to merit of perpetuity. . . . Diuturnity is a dream and folly of expectation." Yet it is not entirely true, for were it so, should we be listening to his solemn music to-day? Saintsbury, no mean judge, speaks of "The mixture of shaded sunlight and half-illuminated gloom which makes the charm of his style and habit of expression; its connection with the singular clarity and equity of his temper and judgment is quite unmistakable." How well this corresponds with the description of the man by his intimate friend Whitefoot, "He was never seen to be transported with mirth or dejected with sadness."

He was indeed himself the Great Amphibium, and while he was floating placidly in divided worlds, the great Leviathan pushed on stormily towards a completely materialistic philosophy.

THOMAS HOBBES was born in the year of the Armada and lived through the Civil War, the Commonwealth, and the Restoration to within nine years of the Revolution. Much had he seen and known of changes during those more than 90 years, yet he remained unchanging, obstinately set in his opinions. When the Long Parliament began to be active, he fled to France, where he became tutor to the future Charles II. But in 1657 he returned to England because he feared the attitude of the French clergy, who were no more tolerant towards him than the Puritans. He was a friend of Ben Jonson, of Lord Herbert of Cherbury, whose philosophy was diametrically opposed to his, of Descartes, and he knew Galileo. Harvey left him a legacy. He was not only a friend of Bacon's, but acted for a time as his secretary. Yet he never set much store by experiment, and he founded his mechanical theory on Galileo rather than on Bacon. It is a little disconcerting to find that men of such varied culture left him so unaltered. It is also suggestive of some attractive traits in the man that they put up with his truculence. His theory was neither attractive nor flattering, starting as it did from a belief that the whole nature of man is a consistent scheme of selfishness. It was not until he was 40 that he formulated his philosophy on a geometrical basis. I like Aubrey's account of this. In a friend's library "a copy of Euclid lay open at the forty-seventh proposition of the first book. So he reads the proposition. 'By God,' says he, 'that's impossible.' So he reads the demonstration which referred him back to another (and so on) that at last he was demonstratively convinced of that truth. This made him in love with geometry." He wanted to reduce the doctrine of justice and policy in general to the "rules and infallibility of reason after the fashion of mathematics." For him motion was the one reality, all others but "the fancies, the offspring of our brains." From geometry he passed through physiology to moral philosophy believing that "the motions of the mind have physical causes." There is a suggestion of conditioned reflexes and behaviourism in the statement that "the internal motions set up by the action of objects upon the senses become reactions on the external world and these reactions minister to the preservation of the individual." He maintained that the appetites and passions of men are such that unless they be restrained by some power they will always be making war upon one another. Government is a social compact for the sake of peace, and men must give up their rights to one man or one assembly of men. And thus we arrive at the absolute monarch, who has rights but no duties, as the apex of his pyramid. Curiously modern some of these items, even if the sequence is a little obscure—matter as a form of motion, and conditioned reflexes leading up to the conception of a totalitarian state. And this quotation is painfully topical, "Covenants of mutual trust where there is a fear of not performance on either part are invalid." These are the main arguments in his chief and most famous book, "The Leviathan." But though an amateur he could not refrain from controversy with genuine mathematicians and scientists such as John Wallis, the first of Glisson's pupils to proclaim Harvey's discovery in public, and with the great Robert Boyle. In these disputes he was labelled "the greatest of circle-squarers."

There is a logical sequence in his attempt to show that the whole fabric of human life and society is built out of simple elements. It is in his premises that error lies, for "the individual is neither real nor intelligible apart from his social origin and traditions [which] influence his thoughts and motives" (Sorley).

Still, as I have reminded you, certain schools of thought to-day favour this pushing of the mechanistic theory as far as it will go, while recognising, as Hobbes did not, that it must leave a whole system of values untouched. And for good or evil, the totalitarian state is with us to-day. So one cannot help feeling a certain regard for the obstinate old man who stuck to his logic with more than French tenacity, and who was only just spared from seeing the divine right of kings finally perish in this country with the landing of William of Orange.

For throughout the century the doctrine of the divine right of kings had been challenged by a people who were finding their staple intellectual and spiritual food in the authorised version of the Bible. As Fisher says:

> "Here was a people's University. Plunging into this vast miscellany, where all that is most solemn and sublime from the distant east is mingled with the records of a savage antiquity, the peoples of England wandered at their own sweet will, unshephered and unfettered, and finding always by the way lessons for the conduct of life, some of infinite depth and beauty, but others prompting to gloom, pride and self-sufficiency."

What the nation needed on waking from the heady dreams of the Renascence was what Europe needs to-day—a time of political peace and social calm. But it was not to be. Though knowledge continued to grow, the thoughts and emotions of the people were diverted by class hatred, religious controversy, and political storms. The climate of opinion was overcast with thunderclouds, and Milton's "two-handed engine at the door" stood ready to smite. It has been well said that it was King James's Bible that cost his son his head.

I believe that if the CAMBRIDGE PLATONISTS could have had their way much strife would have been

avoided. In the political and theological turmoil of the times their's was a steadying and pacifying influence, but unhappily not sufficiently widespread. Yet Harvey thought little of them. In this matter he was more Royalist than the King.

Their home, both spiritual and material, was Emmanuel College. In 1584 Sir Walter Mildmay obtained a charter of incorporation, purchased the home of the Black Friars which had fallen into ruin after the dissolution of the monasteries, and rebuilt it as Emmanuel. Mildmay was a puritan, and from the first the college had a decidedly puritanical character. He told Queen Elizabeth that "he had set an acorn, which when it becomes an oak, God alone knows what will be the fruit thereof." That acorn grew fast, and Fuller wrote in 1634, "Sure I am at this day it hath overshadowed all the University, more than a moiety of the present masters of Colleges being bred therein." Soon after Fuller wrote this, the influence of Emmanuel was to spread across the Atlantic, for John Harvard migrated thence to Massachusetts and saved a college there from disaster with his father's money to make it the pioneer university in the United States. Mullinger, the erudite, if eccentric, librarian of St. John's College in my undergraduate days, regarded Sherman of Trinity as the founder of the movement, and Henry More who was certainly a leader hailed from Christ's. But all the others, of whom I need only mention Whichcote, John Smith, Cudworth, and Culverwel, were all trained at Emmanuel. Their avowed intention was to bring the Church back to "her old loving nurse the Platonick philosophy." Their Platonism was in Wordsworth's phrase, "reason in her most exalted mood," and has been expressed more fully as "the mood of one who has a curious eye for the endless variety of this visible and temporal world, and a fine sense of its beauties, yet is haunted by the presence of an invisible and eternal world behind or . . . within the temporal and visible" (J. A. Stewart). But they were not mere mystics; they regarded abstention from dogmatism as one of the most effective means of promoting unity and concord. Whichcote held that the inductive method was as calculated to prove effectual in allaying theological contention as it had been in the hands of Galileo and Harvey in their respective fields. He maintained that authority proceeds from right reason, not reason from authority. And further he said, "it ill becomes us to make our intellectual faculties, 'Gibeonites,' hewers of wood and drawers of water for the will and the emotions." No wonder that most of them detested Hobbes's materialistic philosophy and were alarmed at his influence. Though he was intellectually more than a match for them, they had a vision which he lacked.

Though Puritan in origin it would be a mistake to regard them as simply Puritans; theirs was a middle course. They had that wider culture which is sometimes successfully grafted on a puritan stock. Dean Inge in his book on the Platonic tradition says "besides the combative Catholic and Protestant elements in the churches, there has always been (this) third element with very honourable traditions, which came to life again at the Renascence but really reaches" much further back. "The flame which [the Cambridge Platonists] kindled among us was lighted in Italy, when Grocyn and Linacre visited the famous Platonic Academy at Florence." But they received "the treatment, as we know both from history and fiction which those must expect who interpose their persons between two violent combatants. . . . In time of war the prophet and seer are not wanted. Effective partisan cries have to be devised, which will appeal to and be understood by the masses. All fine issues are coarsened."

One must regretfully feel that just as the story of the Reformation would have been very different if Erasmus instead of Luther had been its leader, so would the history of Charles I.'s reign if Roundhead and Cavalier could have listened to the sweet reasonableness of these Platonists. But the scholar is no match for the demagogue at such times.

Yet their labour was not in vain in the intellectual world. Only six months after Henry More entered, Milton left Christ's. We know that he described his academic studies as "an asinine feast of sow thistles and brambles," yet a few years later "Cambridge men were deep in Descartes and some of them in Bacon." A new intellectual life sprang into being and the leaven spread as the Platonists were appointed to responsible positions throughout the University.

I cannot enter the courts of Emmanuel without feeling that something of the cool restraining influence of those Platonists haunts them still. They should be living at this hour. Peace be to their ashes.

We are apt to forget that all the Athenians were not reasonable enlightened people, clearly though their refusal to learn from experience proclaims the fact. In the same way we sometimes forget that the enlightenment of the Renascence never penetrated the popular mind, which remained largely medieval in outlook. Just so to-day we can see what the ordinary man feels and thinks from the letters he is impelled to write to the popular press rather than from the writings of Whitehead and Inge. The great witch controversy of the seventeenth century throws light on the popular mentality, in which, alas, greater minds shared. To us it seems almost incredible that such men as Sir Thomas Browne, Henry More, and Joseph Glanvill should have believed in witches. But we must remember they felt that to doubt the existence of evil spirits implied an equal doubt in the existence of beneficent spiritual forces. In appealing to demonology, they were "tapping a reservoir of traditional supernatural belief which lay deeper in the national consciousness than Christianity itself, and deeper certainly than the new ice-crust of rationalism which now covered it" (Willey).

H. V. Routh explains this obsession in terms of modern psychology by saying, "As men struggled towards a higher level of civilisation, they instinctively accused these pariahs (witches, &c.) of all that . . . progress had branded as accursed, but could not eradicate from the imagination. . . . For many, and in some cases, subconscious motives men wished to believe in witchcraft—and the intellect generally follows the emotions." It was the peaceful penetration of the scientific outlook which ultimately destroyed the belief in witchcraft.

In this matter Harvey was on the side of the angels. We know that he presided over the committee who examined the survivors of the unfortunate Lancashire witches in 1634, and pronounced them free from any of the signs then supposed to indicate a witch. Then there is the amusing story of his being sent by the King to inquire about a witch on Newmarket heath. Harvey pretended to be a wizard and got her to show him her familiar—a pet toad. In her absence he dissected it and found it to be an ordinary toad. He pacified the old woman, exasperated by the loss of her pet by explaining he was the King's physician and had adopted this method

of clearing her reputation. One can vividly picture the scene; indeed, if Harvey were the "cholerick little man," as pictured by Aubrey, it is all the more to his credit that he handled the infuriated beldame so gently. Nor does his courtesy in controversy, so rare in those days, support Aubrey's epithet. We may attribute some share in this tolerant attitude of his to the united family that formed the background of his early life. Indeed, throughout they obeyed the request in their father's will to live in unity and mutual help, and one hears an echo of this in Harvey's injunction to our college.

The background furnished by Caius College, St. Bartholomew's Hospital, and our own college has been fully described by others and needs no comment from me save this: we like to think of them in terms of our personal knowledge, but they have all changed, almost beyond recognition, and changed immensely for the better. But until the war, Padua still looked much as it must have done when Harvey paced its colonnaded streets and secluded botanic garden. He must have gazed on Giotto's simple dignified frescoes in the chapel of the arena, and marvelled as we do still at the mingled beauty and learning so enthusiastically expressed by the youthful Mantegna on the pictured walls of the Eremitani. The vast Salone still shelters Donatello's wooden horse and his sculptured high altar reposes under the five domes of San Antonio. In the buildings of the university, nicknamed "Il Bo," stands the anatomical theatre where Harvey watched the dissections of Fabricius; that theatre which served as the model for the old anatomical theatre at Cambridge that lasted into my own student days. Just as the spirit of his maturer age is preserved in this college, so in Padua we can best realise the material surroundings of Harvey's youth. Here too we may well imagine he gained that knowledge of art which fitted him to be entrusted with the responsibility of buying pictures in Venice for such a connoisseur as Charles I.

Soon after that historic cannon ball on Edgehill roused Harvey from his book he retired to Oxford and the pursuit of embryology. He had previously gathered much practical lore from the keepers of the royal forests, and a countryman said of him "if he had been as stiff as some of our starched and formall doctors he had known no more than they." It must have been a relief to leave the turmoil behind and to watch the development of the chick in Bathurst's rooms in Trinity. This aspect of his work has quite naturally received less attention in these orations, except for Dr. Herbert Spencer's scholarly exposition fifteen years ago. Since then embryology has advanced in a new direction which makes it fitting to return to the subject for a few moments.

The widest differences of opinion have been expressed concerning his "De Generatione Animalium." Sir George Ent felt like "another Jason, enriched with the Golden Fleece" when he was allowed to carry it off for publication. Some others have regarded is as a splendid failure. The recent critical analyses of its contents by Needham and by Meyer will help to restore the balance between those two extremes. One cannot help feeling that loyalty to a great name has inspired praise lavished by some, and that the work contains much speculation as well as observation.

I said at the outset that the personality of every great man has a certain impact on his own generation. The converse is inescapably true. We may rightly marvel more at the release from contemporary thought which Harvey displayed in his work on the circulation than at his bondage to it as shown in his embryology. The results of the different mental attitudes that characterise the two books may be summed up in Bacon's aphorism, "If a man will begin with certainties he shall end in doubts, but if he will be content to begin with doubts he shall end in certainties." When at the end Harvey said he despaired of understanding development, we may fairly ask whether he did not begin with what he regarded as some certainties.

Yet much of value remains. Harvey stoutly upheld the doctrine of epigenesis against the prevalent theory of preformation It is astonishing what a hold that Chinese box idea of the ovum continued to have even into the early nineteenth century. Harvey's conception of the gradual differentiation of the simple and homogeneous into the complex and heterogeneous showed philosophical insight and anticipated the ideas of the present century. Nor was this all. He anticipated Glisson by a quarter of a century in the generalisation that all living tissues are characterised by a response to stimulation, and he contested the view of his own master Fabricius that the maternal and fœtal circulation directly communicate. And to him we owe the epigrammatic generalisation "ex ovo omnia."

Considering how little Cambridge did for Harvey in his lifetime, I feel in private duty bound to emphasise something of what my university has done in the last sixty years to develop some of his views. Harvey's idea of the intrinsic rhythm of heart muscle was carried to triumphant demonstration by Gaskell, and has formed the basis of the new cardiology. Frank Balfour's evolutionary conceptions of embryology may be out of fashion now, but what a stimulus they gave to the whole of animal morphology. And they were based on epigenesis. Balfour had been dead seven years when I went to Cambridge, but his old department was still lit with the radiance of his enthusiasm. The studies of Walter Heape and of our own Baly medallist, F. H. A. Marshall, have carried on the torch. And the latest phase, the new chemical aspect of embryology, is associated with the name of Joseph Needham, our Oliver-Sharpey lecturer of this year.

I have tried throughout to indicate the ways in which the turmoil of thought in Harvey's time is reproducing itself to-day. In both instances there had been a phase of great and rapid expansion both in thought and in wealth, followed by disillusionment on the intellectual side and greater stringency on the financial. On each occasion old standards were destroyed before adequate new ones could be provided in their place. A new phase of thought is accompanied by a new form of art. If the baroque did not spring from the counter-reformation it was at least greatly fostered by it. The exponents of the new baroque, Picasso and Epstein, appear to express the feelings of the post-war generation more satisfactorily than they do mine. In their influence on younger poets Donne is paralleled by T. S. Eliot. It is not without significance that some modern writers are beginning to justify Machiavelli and his ideal of the domination of a ruthless leader, while Elizabethan and Jacobean thinkers felt the effect of his doctrines to be corrosive and withering. It has been well said that "the sinking of the clear exaltation of Elizabethan dramatic poetry into the sophisticated, satirical conflicting mood . . . of the Jacobean drama had many concurrent causes. The apprehension, regret and disillusionment inevitable

to the conscious passing of a long period of high civilisation were not in this case unfounded, and those who had known the great age, even those who had only grown to manhood during its latest years, were touched by them (like the generation that succeeded the Great War) without being able to define their loss in what had passed. Moreover . . . a stage of development in which some transition from wonder and discovery to assessment and criticism was inevitable." The modern parallel unfortunately needs no emphasising. There is however one outstanding difference. Then, the way of investigation by experiment was new and seemed full of hope; now there are murmurs to be heard against science itself. Bacon's utterances have not quite the same thrill. The discovery of facts has not in the long run proved so exhilarating after all (Basil Willey). Science on the one hand offers material comfort, on the other, intellectual abstractions. This leads to a mechanised world without moral direction. Too many men use dangerous machines like toys, as would a child. In the reaction against this we are actually hearing sighs of regret for the passing of the scholiasts, with their strange doctrine that a belief can be metaphysically true, though empirically false. Men grasp at the indeterminacy of the atom to revive the idea of miracles. As in other ages of spiritual doubt and political uncertainty, the cult of astrology, not to mention other strange cults, is becoming fashionable.

Man's brain has not been able to adapt itself quickly enough to the material changes of the last hundred years. Sir Alfred Ewing was saddened in his last years by the use men were making of the inventions he himself had helped to promote. Lowes Dickinson asked if there were a way of escape from the alternatives—shall we allow science to destroy us or shall we destroy it to save ourselves? Such statements however relate to the physical sciences—biology must restore the balance. If we would understand ourselves—a much needed investigation—we must realise that we are subject to the laws of biology. A study of history from the biological angle would contribute towards that understanding.

And of all branches of biology, medicine can play the largest share in the reconciliation of science with ethics. In these latter days medicine is becoming increasingly psychological in its approach to suffering, while developing its scientific armament as much as possible. The field of medicine is ever widening; we can neither remain isolated in our laboratories nor merely stay by the bedside. We are taking a broader view of Harvey's injunction to seek out the secrets of nature, and are becoming one of the leading social services. In that development I am proud to think that this ancient college is now playing an increasingly important part.

Towards the end of his life Harvey wrote to a young medical man that as an explorer his own days were, alas, numbered. "But," said he, "it will always be a pleasant sight to see distinguished men like yourself engaged in this honourable arena." There spoke the true spirit of adventure, glad to hand on the torch to the younger generation. In like spirit, it is good for us, on this, the morrow of St. Luke's Day, to pause amid the rush of life for an hour to join hands with those who have gone before and with those who will come after us. Thus is the real continuity of this college assured.

And so I exhort you in Harvey's own words "for the honour of the profession to continue in mutual love and affection."

# VITAMIN-C DEFICIENCY IN ADDISON'S DISEASE

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BIOCHEMICAL ASSISTANT

THE method introduced by Harris et al.[1 2] has provided a simple technique for the diagnosis of vitamin-C subnutrition. A series of patients with Addison's disease have been available in the Manchester Royal Infirmary during the last months, and the opportunity has been taken to investigate some of them from the point of view of vitamin-C deficiency by means of the technique of urine titration. The results obtained in three cases are described here.

The *technique* employed was essentially that of Harris and Ray. In all cases, one-tenth of the volume of glacial acetic acid was added to the urine immediately it was voided, and the titration carried out within a short time or in the case of overnight specimens within a few hours of passing. In actual fact, titrations were carried out on each individual sample during the day, but for the sake of brevity only the average concentrations during the 24-hour period are given in the Tables, together with the total 24-hour excretion. In all cases the 24-hour period is taken from noon of the date given to noon of the following day. The administration of the test dose therefore precedes the beginning of the collection of the day's urine. All the patients were women, and very occasional samples may have been missed. For this reason a somewhat long control period was necessary before giving the graded test dose.

## CLINICAL DETAILS

The following notes are abbreviated since the cases will be described fully in another paper embodying a report to the Therapeutic Trials Committee of the Medical Research Council.

CASE 22.—A housewife, aged 44, was admitted to hospital on June 18th, 1935. She had been in good health until six months previously when she began to feel tired and short of energy. Attacks of vomiting followed, and increasing pigmentation of the skin. There was loss of weight, asthenia, and amenorrhœa for six months.

The skin was a very dark brown, the hair was black, and the eyes brown. Pigmentation was most intense on the skin over the elbows, knuckles, and knees, round the mouth and eyes, and over the malar eminences, shoulders, and lower abdomen. The buccal and vaginal mucous membranes also showed patchy pigmentations; the areolæ were not pigmented. Nothing abnormal was found in the chest, abdomen, and nervous system. Pulse: regular, poor volume, 96 per min. Temperature 97° F. Blood pressure 90/60. Weight 6 st. 4 lb. Urine: traces of albumin and diacetic acid. Blood: urea, 60 mg. per 100 c.cm.; sugar, 80 mg.; chlorides, 445 mg.; sodium, 312 mg.; inorganic phosphate, 5·3 mg. Basal metabolic rate: deceased by 11 per cent. Blood count: red cells, 4,224,000; hæmoglobin, 74 per cent.; colour-index, 0·9; white cells, 8200 (polymorphonuclears 47·0, lymphocytes 49·5, large mononuclears 3·0, eosinophils 0·5, basophils nil); aniso- and poikilo-cytosis slight; nucleated red cells nil; platelets scanty. Fractional gastric analysis showed achlorhydria gastrica. X ray examinations of the chest and suprarenals showed nothing abnormal.

The patient was under observation in hospital from June 18th, 1935, to Feb. 14th, 1936. During that period her systolic blood pressure varied between 50 mm. at the crises to about 100 mm. (on one occasion 111) during the

remissions. Throughout this time also her temperature was somewhat irregular, between 97°–99° F. with occasional rises above 100° F. Her lowest recorded weight was 5 st. Extensive biochemical and clinical investigations were carried out regularly and will be reported elsewhere. She was treated with suprarenal cortical extracts administered daily, either intravenously or intramuscularly, and survived several crises in which she had been critically ill. Later, during the periods of the ascorbic acid experiments

TABLE I. (Case 22)

| Date. | Av. conc. A.A.* in urine (mg. per c.cm.) | 24-hour total (mg.). | Ascorbic acid therapy. | Date. | Av. conc. A.A.* in urine (mg. per c.cm.) | 24-hour total (mg.). |
|---|---|---|---|---|---|---|
| Nov. | | | | Dec. | | |
| 13 | 0·00485 | 2·57 | | 1† | 0·148 | 46·6 |
| 14 | 0·0083 | 2·25 | | 2 | 0·088 | 40·0 |
| 15 | 0·0073 | 1·98 | | 3 | 0·042 | 23·7 |
| 16 | 0·006 | 2·44 | Control | 4 | 0·03 | 8·6 |
| 17 | 0·0065 | 2·12 | period. | 5 | 0·03 | 10·0 |
| 18 | — | — | | 6 | 0·017 | 6·58 |
| 19 | 0·008 | 2·02 | | 7 | 0·01 | 1·32 |
| 20 | 0·0056 | 1·48 | | 8 | 0·008 | 7·4 |
| 21 | 0·0076 | 3·09 | | 9 | 0·0096 | 5·17 |
| 22 | 0·0135 | 3·13 | 300 mg. | 10 | 0·0057 | 5·7 |
| 23 | 0·0145 | 4·0 | orally. | 11 | 0·005 | 5·0 |
| 24 | — | — | | 12 | 0·0073 | 4·39 |
| 25 | 0·035 | 14·0 | | 13 | 0·008 | 3·66 |
| 26 | 0·065 | 25·4 | 450 mg. orally. | 16 | 0·0075 | 4·76 |
| | | | | 17 | 0·01 | 4·05 |
| 27 | 0·075 | 12·0 | | 18 | 0·008 | 2·2 |
| 28 | 0·124 | 21·3 | 500 mg. | Jan. | | |
| 29 | 0·127 | 40·6 | orally. | 25 | 0·0077 | 4·06 |
| 30 | 0·17 | 72·4 | | | | |

* Av. conc. A.A. = Average concentration ascorbic acid in urine.
† From Dec. 1st ascorbic acid therapy was discontinued.

described herein, she was receiving 10–20 c.cm. suprarenal cortical extract (Cortin) daily, but no salt, and her systolic blood pressure remained between 80–95 mm. Her weight at this time was increasing (5 st. 4 lb.). She was in quite good condition and definitely improving, being free from gastro-intestinal symptoms and less asthenic.

Throughout the illness the patient's urinary volumes were small, being 300–500 c.cm. daily. On account of her low weight the initial test doses of ascorbic acid were graded. The daily urinary excretions of ascorbic acid are shown in Table I. The diagnosis of Addison's disease was confirmed on Feb. 14th when she died suddenly from a first and only paroxysm of auricular fibrillation with cardiac muscle failure. Autopsy showed extreme atrophy of both suprarenal glands but no evidence of tuberculosis.

CASE 23.—A housewife, aged 32, was admitted to the Manchester Royal Infirmary on Jan. 14th, 1936, complaining of loss of energy, extreme weakness, backache, and increasing pigmentation of the skin. These symptoms had been coming on gradually for 18 months during which period she had been subject to attacks of nausea and vomiting. She became constipated but menstruation was not affected. Weight was lost and finally she was unable to carry on her household duties.

She was of very slim build (weight 7 st. 12 lb.) and moderately asthenic. Pulse: 72, regular. Blood pressure 125/75. There were old scars in the left cervical and submastoid regions where tuberculous glands had been excised many years previously. The skin was very dark brown, especially on the chest (areolæ and axillæ), face, hands, wrists, and knees; there were small pigmented patches in the buccal and vaginal mucous membranes. Eyes dark brown, hair almost black; previously she had been a brunette. Basal metabolic rate: decreased by 2 per cent. Fractional gastric analysis showed hypo-acidity (maximum titre 17 units HCl at 1¼ hours). Blood count: red cells, 4,960,000; hæmoglobin, 93 per cent.; colour-index, 0·93; white cells, 12,600 (polymorphonuclears 47·5, lymphocytes 46·5, large mononuclears 6·0, eosinophils nil, basophils nil); aniso- and poikilo-cytosis slight; nucleated red cells nil; platelets in moderate numbers. Blood: urea, 24 mg. per 100 c.cm.; chlorides, 460 mg.; sodium, 330 mg.; inorganic phosphate, 3·8 mg.; sugar, 77 mg. Wassermann reaction: negative. X ray examinations: chest negative; loins showed an irregular calcification at the upper pole of the left kidney with slight extension along the outer border; faint trace of calcification above the upper pole of the right kidney.

During the first few days after admission to hospital the patient had further attacks of nausea and vomiting, while the pigmentation became more conspicuous. The systolic blood pressure fell to 95–105 mm. and the weight to 7 st. 6 lb. There were no gross changes in the biochemical findings. She was stabilised with suprarenal cortical extract (cortin) at 10 c.cm. intramuscularly daily in the first stages, later 5 c.cm. on alternate days and then every third day. A further gradual reduction in dosage to 5 c.cm. per week became possible with the exhibition of sodium chloride (15 g. daily). Later cortin was discontinued entirely. During the whole period of the ascorbic acid test she received a daily dose of 10 c.cm. cortin and no salt; at this time the weight was 7 st. 10 lb. The urinary excretion of ascorbic acid is shown in Table II. The volume of urine excreted was 800–1000 c.cm. daily. The maximum concentrations of ascorbic acid reached 0·4 mg. per c.cm. on Feb. 1st, 1936, and 0·47 mg. on

TABLE II. (Case 23)

| Date. | Av. conc. ascorbic acid in urine (mg. per c.cm.). | 24-hour total (mg.). | Therapy. |
|---|---|---|---|
| Jan. | | | |
| 23 | 0·006 | 4·63 | |
| 24 | 0·0068 | 4·68 | |
| 25 | 0·013 | 10·61 | Control |
| 26 | 0·0091 | 8·45 | period. |
| 27 | 0·0126 | 11·43 | |
| 28 | 0·0095 | 4·58 | |
| 29 | 0·0105 | 7·77 | |
| 30 | 0·01 | 5·28 | 500 mg. ascorbic |
| 31 | 0·057 | 42·2 | acid per os at |
| Feb. | | | noon. |
| 1 | 0·26 | 132·2 | |
| 2 | 0·205 | 85·1 | |
| 3 | 0·034 | 35·55 | |
| 4 | 0·016 | 13·06 | |
| 5 | 0·029 | 24·96 | Ascorbic acid dis- |
| 6 | 0·014 | 18·1 | continued. |
| 7 | 0·0089 | 7·34 | |
| 10 | 0·0077 | 6·50 | |
| April | | | |
| 28 | 0·0068 | 6·50 | High vitamin-C |
| June | | | diet. |
| 16 | 0·018 | 29·0 | |

Feb. 2nd—on each occasion four hours after the test doses.

This patient is still alive and has improved very much on treatment with salt and very occasional injections of cortin. Her weight is 8 st. 12 lb. and her blood pressure 120/80.

CASE 24.—A housewife, aged 48, was admitted to hospital on Nov. 14th, 1935. She gave a history that she had been losing weight for twelve months, and had lost over 4 st.; the rate of loss had recently increased. About nine months ago she began to complain of increasing weakness and fatigue and noticed that her complexion was becoming increasingly sallow. She had shooting pains in the head and aching pains over the sacrum. Her appetite became poor, and there was vomiting occasionally, at intervals of about four weeks. The bowels were constipated. Micturition was normal; menstruation irregular.

On examination it was clear that the patient had lost much weight, for the skin of the abdomen was loose and hung in loose folds below the vulva when she was erect. She was much pigmented, especially around the eyes, over the cheeks, elbows, knuckles, shoulders, knees, and abdominal wall, and on the insides of the thighs. The nipples were very dark. There was pigmentation on the palate, while the buccal and the vaginal mucous membranes were also pigmented. The teeth were in poor condition. The pulse was rapid, of fair volume and regular, rate 92. The temperature varied from 97° to 98° F. The heart was normal in size and the sounds were also normal. Blood pressure 120/70. Weight 7 st. 12½ lb. The lungs presented no unusual features. In the abdomen, liver, spleen, and kidneys were not palpable although the abdominal wall was extremely lax. There were no enlarged lymph glands. Nothing abnormal was found in the central nervous system. Blood: urea, 20 mg. per 100 c.cm.; chlorides, 460 mg.; sodium, 328 mg.; inorganic

phosphate, 4·0 mg; sugar, 81 mg. Basal metabolic rate: increased by 4 per cent. Fractional gastric analysis showed achlorhydria gastrica. Glucose-tolerance test 77, 95, 113, 105, 100, 91 mg. glucose respectively at half-hourly intervals. X ray examinations of the chest and loins did not disclose anything abnormal.

The patient was treated with suprarenal cortical extract (cortin) commencing on Nov. 23rd with 10 c.cm. daily,

TABLE III. (Case 24)

| Date. | Av. conc. ascorbic acid in urine (mg. per c.cm.). | 24-hour total (mg.). | Therapy. |
|---|---|---|---|
| Nov. | | | |
| 25 | 0·0069 | 5·72 | Control period. |
| 26 | 0·0058 | 4·89 | |
| 27 | 0·0076 | 3·37 | |
| 28 | 0·0088 | 5·19 | |
| 29 | 0·0086 | 5·18 | Received 500 mg. ascorbic acid per os at noon. |
| 30 | 0·007 | 5·58 | |
| Dec. | | | |
| 1 | 0·0068 | 6·20 | |
| 2 | 0·010 | 6·96 | |
| 3 | 0·018 | 12·3 | |
| 4 | 0·093 | 58·2 | |
| 5 | 0·108 | 108·0 | |
| 6 | 0·222 | 208·3 | |
| 7 | 0·23 | 148·1 | |
| 8 | 0·106 | Menstruation commenced. | Ascorbic acid discontinued. |
| 17 | 0·017 | 10·6 | |
| 18 | 0·017 | 9·37 | |
| June | | | |
| 23 | 0·007* | 10·6* | Moderate vitamin-C diet. |
| July | | | |
| 14 | 0·014 | 15·6 | |

* Results certainly too low, owing to late addition of acetic acid.

but increasing the dose on the 27th to 20 c.cm. for three days. The treatment continued thereafter was 10 c.cm. daily until Dec. 25th. During this period the systolic blood pressure remained about 100–105 mm., the biochemical findings remained within normal limits. Afterwards the dose of cortin was gradually reduced and 15 g. sodium chloride given daily. The patient's subsequent history has been extremely satisfactory. She has continued to improve, has put on weight and is now only taking salt by mouth and an occasional dose (5 c.cm.) of cortin intramuscularly. Her systolic blood pressure is now maintained at 120–124 mm. At the time of the test shown in Table III. her weight was 7 st. She passed 500–900 c.cm. of urine daily. The maximum concentration of ascorbic acid in the urine after the test doses had been given was 0·66 mg. per c.cm. five hours after the test dose on Dec. 6th (see Table III.). Estimations had to be discontinued on Dec. 8th because menstruation recommenced.

### RESULTS OF EXCRETION TEST

The figures given in Tables I.–III. indicate a considerable degree of vitamin-C deficiency, particularly in Case 22. In all three there was a subnormal concentration of ascorbic acid in the urine and very low 24-hour excretion during the control period. This was followed by responses, of varying slowness, to the repeated oral administration of large test doses of the synthetic *l*-ascorbic acid. When therapy was discontinued the increased excretion fell rapidly to values characteristic of the control period. (The values and findings reported here are very similar to those reported by Siwe [3] on one case of Addison's disease.) In one case (No. 23) the excretion was measured six weeks after discharge from hospital, after the patient had added six oranges per day to her diet during the previous two weeks. Her urinary concentration was even then still low and the 24-hour excretion similar to her control period. Seven weeks later (June 16th), when the patient's clinical condition was tremendously improved and she had been taking a high but reduced vitamin-C diet in the form of three oranges per day, her urinary concentration had risen to 0·018 mg. per c.cm. and the 24-hour excretion to 29 mg. (see also Case 24, Table III.).

It is interesting to note that the degree of subnutrition paralleled the severity of the disease in these three cases investigated, in so far that Case 22 was the most acute of the series and showed the highest degree of subnutrition, while Case 23 was the least severe and showed the lowest.

### DISCUSSION

The significance of the findings is not clear, but a number of possibilities present themselves.

(1) Subnutrition may be a feature of the disease, as is suggested by the fact that that it runs parallel with the severity of the symptoms. On the other hand it may simply be an entirely non-specific index of the extremely low state of health of the patient, since it is known that many hospital cases show vitamin-C deficiency. Against this is our own observation that patients taken at random in the wards did not show the vitamin lack, though the complete technique of the test dose was not carried out on these cases.

(2) Lack of absorption in the gut may be a limiting factor. Against this, however, is the fact that in our own cases the gastro-intestinal symptoms of the disease were under control during the experimental period, while the response to oral administration of ascorbic acid is seen in the Tables. It was not desirable to give injections of ascorbic acid to our patients, for they were receiving very frequent injections of cortin.

(3) There may be an increased need for, or an increased destruction of, the vitamin. Such increased destruction has been shown in different febrile conditions by a number of observers—e.g., Drigalski,[4] Schroeder,[5] Faulkner,[6] Abbasy et al.,[2] Harde et al.,[7] Bullowa et al.[8] Pyrexia, however, is not a feature of Addison's disease except in the terminal few days of the tuberculous cases. On the contrary the temperature is usually subnormal and the general metabolism is on a much reduced scale.

(4) It is well known that both the cortex and the medulla of the normal adrenal gland have a high content of ascorbic acid compared with other body organs (Harris and Ray [9]). These authors have, in fact, pointed out that, in the guinea-pig at least, the adrenals cannot be regarded as a body store for ascorbic acid, and a similar conclusion was reached by Beznák and Hariss.[10] The determinations carried out on human organs by Yavorsky et al.[11] are in agreement with this, so that it is not possible to relate the vitamin deficiency reported here to lack of storage in the damaged adrenals.

(5) The significance of the normally very high ascorbic acid content in the adrenals has given rise to speculation. Two suggestions have been made: (*a*) That it is concerned with the maintenance of a correct state of oxidation-reduction potential in the adrenals, and would thus serve to stabilise both the medullary hormone (adrenaline) and the cortical hormone (cortin). This view has been taken by Vars and Pfiffner [12] (see also King [13]) but lacks direct evidence. (*b*) That it is concerned in the regulation of skin pigmentation. This suggestion will be considered in a separate section.

### VITAMIN C AND PIGMENTATION

Since the isolation of hexuronic acid by Szent-Györgyi[14] in 1928, and its identification with vitamin C, after which it was renamed "ascorbic acid," much work has been carried out to define a relationship between this substance and the formation of skin

pigment in abnormal amounts. Szent-Györgyi himself wrote in 1930: "Hexuronic acid completely inhibits the formation of pigment in all systems in which a melanoid pigment is formed through the oxidation of a phenol. . . . The absence of hexuronic acid in Addison's disease could thus give a clear explanation of the mechanism of pigment formation." (See also Szent-Györgyi.[16]) Abderhalden [17] has shown in vitro an inhibition of pigment formation from adrenaline and from *l*-3 : 4-dioxyphenylalanine ("dopa") by ascorbic acid both with and without the addition of the enzyme tyrosinase. Schroeder [18] using slices of guinea-pig ear has shown inhibition of pigment formation from dopa in the presence of ascorbic acid; Grüneberg and Schade [19] have made the same observation, and believe that the point of protection is the "melanogen" itself, and the effect is not due to inhibition of an enzyme. On the other hand Jadassohn and Schaaf [20] failed to affect an experimentally produced chloasma uterinum in guinea-pigs with ascorbic acid. Less to the point is the failure of Drigalski [21] and Tenchio [22] to inhibit pigmentation by ultra-violet light in normal subjects on diets rich in vitamin C, though Schade [23] and Hoff [24] have since claimed that such inhibition occurs. Morawitz [25] states that the pigmentation of Addison's disease was strikingly diminished in three cases by oral administration of adrenal cortex, though other symptoms of the disease were unaffected. A "chloasmatic melanosis" of scurvy was successfully relieved by orange and lemon juice therapy. Morawitz [25] suggests the possibility of a pigment vitamin though he leaves open the question as to whether it is identical with ascorbic acid. (It is likely of course that his adrenal cortical extracts contained ascorbic acid but no cortin.) Hoff [24] has made similar claims for the alleviation of pathological pigmentation in scurvy and Addison's disease by oral and intramuscular ascorbic acid therapy.

Our own experience has been different from this. The pigmentation of cases reported here did not show any appreciable change during the test period of intensive oral ascorbic therapy. It is possible that defective absorption may have contributed to this negative effect, but it was not considered desirable to give any further intramuscular treatment at this time. It should be noted that the patients were steadily getting better during the time of the tests, as a result of vigorous intramuscular cortin therapy.

Since discharge from the infirmary Cases 23 and 24 have received a high vitamin-C diet (3–6 oranges per day), and have had administered intramuscularly small (2·5 c.cm.) doses of cortin at irregular intervals of several weeks. It has been noticeable in both cases during the last three months that the pigmentation has much decreased. Whether this improvement is to be related in any way to the high vitamin-C diet (it is noteworthy that the urinary vitamin-C excretion has now reached "normal" levels) or to the gradual remission of the disease under the very small doses of cortin now being given, it is, of course, impossible to say. Further observations are necessary on this point.

SUMMARY

Three patients with Addison's disease have been shown, by means of the test described by Harris and Ray, to suffer from vitamin-C subnutrition. The degree of subnutrition parallels the severity of the illness. The possible significance of the finding and the relationship of vitamin C to pathological pigmentation is discussed.

Our thanks are due to Organon Laboratories, London, for kindly supplying the cortin administered to these patients, and to Messrs. Hoffmann-la Roche, London, for generous supplies of ascorbic acid. These investigations were assisted by grants from the Medical Research Council and were associated with an inquiry into the treatment of Addison's disease with suprarenal cortical extracts, made on behalf of the Therapeutic Trials Committee of the Medical Research Council.

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# ŒSTRIN IN TOXIC GOITRE

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THE frequent enlargement of the thyroid in women during puberty, pregnancy, lactation, and the menopause has attracted the attention of physicians for centuries, and suggested an inter-relationship between the thyroid gland and the gonads. It is doubtful, however, whether this relationship is as definite as it appears, and it is certainly far from being clear-cut. Irregularities of menstruation, amenorrhœa and even menorrhagia, are common symptoms in toxic goitre, but they are not uncommon in myxœdema, especially menorrhagia.[1] Rogers [2] observed that the ovaries in all his cases of toxic goitre were large and tender, and that menstrual disorders were present in all. Moebius,[3] however, considered that such symptoms were no more frequent in toxic goitre than in any other equally serious disease; my own impression is in agreement with this view. Rogers [2] has described acute exophthalmos following the removal of one or both ovaries, but such a sequence is probably fortuitous, considering the extreme rarity of such a condition and the frequency of ovariectomy. On the other hand, the occurrence of sexual infantilism in cretinism, of impotence, sterility and even atrophy of the genitalia in myxœdema, of atrophy of the gonads after experimental thyroidectomy in animals, and the amelioration of these conditions by the administration of thyroid [4] are evidence that adequate secretion of the thyroid is essential for the normal development and function of the sexual glands. Yet, to complicate the picture, sterility and sexual atrophy also occur in toxic goitre.[4] From the clinical evidence there is no doubt that the gonads are affected by the thyroid,

but it is not so certain that the thyroid is affected by the gonads.

### EXPERIMENTAL STUDIES ON INTER-RELATIONS OF THE THYROID AND GONADS

Experimental work on the effect of gonadectomy on the thyroid gland is controversial. In 1933 Andersen and Kennedy [5] reviewed the published papers on this subject up to date and contributed well-controlled experiments of their own. Most of the published work has been performed on rabbits, guinea-pigs, and rats, and the general impression gained was that gonadectomy was followed by atrophy of the thyroid gland. In their own experiments on rats Andersen and Kennedy confirmed this impression, and found a definite atrophy of the thyroid in all their animals eight weeks after the operation. Histologically the thyroid follicles were smaller than those of the controls, contained denser colloid, and were surrounded by low or flat epithelium. In eunuchs the thyroid gland is also said to be atrophic. Marine [6 7] was of the opinion that removal of the gonads in animals probably tended to decrease thyroid activity, but that a direct relationship was doubtful. Aron and Benoit [8 9] however observed activity of the thyroid after castration in young guinea-pigs, and also in cocks and ducks. More recently Loeser [10] has repeatedly found hyperplasia of the thyroid in guinea-pigs following removal of the ovaries. It is difficult to reconcile the conflicting results that have been obtained in these experiments.

Within the last decade it has been clearly shown that the function of the thyroid gland is dependent to a large extent on the integrity of the anterior pituitary, and experimental hyperthyroidism may now be produced in animals, especially the rabbit and the guinea-pig, by the daily injection of extracts of the anterior pituitary containing a thyroid stimulating hormone. Any action, therefore, of the gonads on the thyroid may be indirect through the anterior pituitary. It is well known that castration is followed by enlargement of the pituitary and that the operation in women leads to an increase in the production of anterior pituitary gonadotropic hormone, more especially the follicle-stimulating principle. Moore and Price [11] have advanced the hypothesis that gonadal hormones (œstrin) suppress pituitary function, and Aron and Benoit [8] have performed interesting experiments in this respect. They found that castration of young guinea-pigs was followed by thyroid hyperplasia, and that the serum or urine of the castrate injected into a young guinea-pig showed the presence of anterior pituitary thyrotropic hormone, in that it caused hyperplasia of the thyroid of the recipient. They concluded from their experiments that gonadectomy in the male or female brings about a notable increase of thyrotropic hormone and hence of thyroid activity, and that an internal secretion of the gonads is capable either of inhibiting the secretion of thyrotropic hormone or of preventing its effect on the thyroid. Similar conclusions were reached by Loeser [10] and by Kippen and Loeb.[12]

Experiments on the effect of the administration of œstrin on the thyroid gland of laboratory animals have likewise produced conflicting results. Most investigators have observed a flattening of the epithelium and an increase in colloid, significant of hypofunction, others have observed no noticeable change, and others a hypertrophy of the gland. These different effects, according to Marine,[7] may probably be explained by the varying periods of œstrin administration, for Tagliaferro [13] found that if œstrin were administered for 5–10 days, enlargement of the thyroid resulted, but if the administration were continued for 20 days or more the opposite effect was produced. Aron and Benoit,[14] following up their work on the effect of gonadectomy on the thyroid and on the production of thyrotropic substance by the pituitary, injected simultaneously into young guinea-pigs a single dose of thyrotropic extract and one or several large doses of œstrin, and found that the action of the anterior pituitary extract on the thyroid was diminished or prevented. Similarly, other investigators have found that the injection of large doses of œstrin decreases the amount of growth,[15 16] gonadotropic [15 16 17] and diabetogenic hormones [18 19] produced by the anterior pituitary.

Before proceeding with the clinical application of œstrin in the treatment of toxic goitre, I repeated the experiments of Aron and Benoit on its effect on the thyrotropic hormone in a much smaller batch of animals. The results are in agreement with theirs, in so far as the thyroid hyperplasia consequent on the action of thyrotropic hormone was diminished, but not completely prevented.

Four guinea-pigs, weighing about 300 g., were injected daily for 12 days with 1 c.cm. of acid extract of anterior pituitary powder (pregnant cows: Organon), prepared according to a modified method of Loeb and Bassett.[20] At the same time each received daily subcutaneous injections of 2000 international units (I.U.) of dihydroxyœstrin (Dimenformon, Organon) for the same period. Four controls of approximately the same weight received daily 1 c.cm. of anterior pituitary extract only for 12 days. On the thirteenth day both groups were sacrificed. The thyroid glands of the controls showed hyperplasia to a marked degree, whereas in the animals which received œstrin the hyperplasia was either slight or moderate.

The conclusion drawn was that under the conditions of the experiment œstrin had a slight but definite antithyrotropic effect.

### CLINICAL RESULTS

In view of these experiments it was considered that the administration of œstrin in large doses to patients with toxic goitre was worthy of a trial. This form of therapy was used in six women with typical symptoms and signs of toxic goitre and without any complicating factors such as auricular fibrillation or diabetes mellitus. Their ages ranged from 20 to 56, two having passed the menopause. All except one (Case 6) had received iodine from their private doctor before they came under our observation. Because a patient with toxic goitre will improve so considerably with rest in bed alone, they were kept in bed for a preliminary period of 14–32 days without any medication before the administration of œstrin was begun. Even this preliminary period may have been too short in some cases, but we had to take into consideration the fact that a longer one would have meant a more protracted stay in hospital than would have been agreeable to the patient. In choosing the cases for observation inquiries were made whether the patient would be content to remain in hospital for the length of time necessary; to attempt observations on a person who for domestic or other reasons required as short a stay in hospital as possible would be a waste of time, as such a patient would be constantly fretting and thus invalidate the result.

While under observation the patients were weighed and estimations of the basal metabolic rate made once or, usually, twice a week. Four patients received intramuscular injections of 50,000 I.U. dihydroxyœstrin (dimenformon) daily for 12 days in two cases (Nos. 1 and 2) and for 21 days in the other two (Nos. 3 and 5). Two patients (Nos. 4 and 6) received by mouth 250,000 I.U. ketohydroxyœstrin (Menformon,

Organon) daily for 21 days in divided doses of 50,000 units five times a day. One of these patients (No. 4) felt nauseated on several occasions while receiving menformon and on one day vomited several times. This woman, however, had had attacks of nausea at intervals before admission. None complained of abdominal pain or discomfort while receiving œstrin. The period of observation was too short to reach any definite conclusion concerning its effect on menstruation.

The effect of œstrin on the clinical condition of these women was slight; in fact, any improvement which occurred could well be accounted for by the prolonged rest in bed. There was no dramatic response such as is obtained in a patient who is receiving iodine for the first time. Some patients said that they felt less nervous, in others there was a slight decrease in pulse-rate and in pulse range, in others there was some gain in weight. The exophthalmos, size of the thyroid, tremor, moistness of the skin and basal metabolic rate, however, remained practically unchanged.

The following are summaries of the case-histories, with details of the pulse-rate, body-weight, and basal metabolic rate before and during treatment.

CASE 1.—Aged 20, single, no occupation. At the age of 14 had pulmonary tuberculosis with positive sputum, healed with sanatorium treatment. Seven months' history of faintness, loss of weight, palpitations, dyspnœa, headaches, emotional instability, some swelling of neck. Given iodine by private doctor and received X ray treatment to thyroid with improvement. Three months later, collapse and delirium for one day following tooth extraction; recovered but marked dyspnœa and palpitations on exertion persisted. Admitted to surgical ward for partial thyroidectomy, but immediately before operation there was such a rapid increase in pulse-rate that operation was postponed. Menses regular, heavy loss. Previous history: no worries. Family history: sister, aged 17, died of toxic goitre. On examination: nervous; fine tremor of hands; slight exophthalmos; tonsillar remains slightly infected; thyroid diffusely enlarged and firm; heart overacting; blood pressure 155/65.

Admitted Dec. 5th, 1935. Received 50,000 I.U. of dimenformon intramuscularly daily from Dec. 19th to 30th inclusive.

| Date. | Pulse-rate. | Body-weight (lb.). | B.M.R. (per cent.). |
|---|---|---|---|
| Dec. 7th | 120–156 | 114 | +35 |
| " 14th | 100–130 | 112 | +32 |
| " 18th | 100–135 | 112 | +32 |
| " 21st | 110–140 | 112 | +27 |
| " 28th | 90–126 | 112½ | +27 |
| Jan. 1st | 90–126 | 112½ | +40 |
| " 4th | 100–130 | 112½ | +40 |

*Remarks.*—Menstruation started on Jan. 6th, a few days late, and continued till the 8th. Œstrin appeared to have little effect on her menses. After œstrin therapy patient said that she felt less nervous, but there was no change in physical signs. On Jan. 17th, partial thyroidectomy by Mr. Geoffrey Keynes, with marked improvement.

CASE 2.—Aged 30, married, housewife. Five years' history of swelling of neck, dyspnœa on exertion, loss of weight (14 lb. in four months), nervousness, sweating. Received iodine from private doctor. Four years later dyspnœa increased, severe palpitations, very nervous and tremulous, tired at night. Menses regular, scanty flow. Habits: no interests, little to do, few friends, home life happy, no worries. Family history: mother and sister had simple goitre. On examination: nervous; skin warm and moist; fine tremor of hands; exophthalmos; tonsils healthy; thyroid diffusely enlarged and firm; heart overacting; B.P. 156/72.

| Date. | Pulse-rate. | Body-weight (lb.). | B.M.R. (per cent.). |
|---|---|---|---|
| Jan. 2nd | 108–120 | 110½ | +70 |
| " 14th | 100–110 | 103 | +56 |
| " 16th | 80–105 | 103 | +55 |
| " 18th | 90–105 | 103½ | +55 |
| " 23rd | 80–106 | 105 | +30 |
| " 26th | 86–110 | 106 | +57 |
| " 30th | 90–100 | 104 | +46 |
| Feb. 2nd | 84–94 | 104 | +40 |

Admitted Dec. 31st, 1934. Received 50,000 I.U. dimenformon intramuscularly daily from Jan. 21st to Feb. 1st, 1935, inclusive.

*Remarks.*—Menstruated from Jan. 4th to 6th; no further menstruation while under observation (discharged Feb. 27th, 1935). Possibly slight improvement during and after œstrin administration: quieter, less nervous, some fall in pulse-rate and basal metabolic rate, all of which may have been due solely to rest in bed. No definite change in condition of skin, tremor, exophthalmos, size of thyroid or body-weight. On Feb. 15th, 1935, partial thyroidectomy by Mr. Keynes, with marked improvement.

CASE 3.—Aged 38, married, housewife. Two years' history of dyspnœa and palpitations on exertion, nervousness, sweating, staring of eyes, easily tired, swelling of ankles, loss of weight. Six months before admission received iodine and later X ray treatment to thyroid with no improvement. Menses regular, lasting one day; before present illness lasted one week. Lost 28 lb. in weight in two years. Previous history: no worries. Family history: two sisters had toxic goitre and died of lobar pneumonia. On examination: nervous; skin moist; slight exophthalmos; tonsils healthy; fine tremor of hands; thyroid diffusely enlarged; heart overacting, occasional extrasystoles; B.P. 120/65.

Admitted April 15th, 1936. Received 50,000 I.U. dimenformon intramuscularly daily from May 5th to 24th inclusive.

| Date. | Pulse-rate. | Body-weight (lb.). | B.M.R. (per cent.). |
|---|---|---|---|
| April 22nd | 96–110 | 93 | +23 |
| " 25th | 90–100 | 94 | +62 |
| " 29th | 92–120 | 96 | +41 |
| May 2nd | 102–120 | 96 | +45 |
| " 6th | 104–120 | 96 | +39 |
| " 9th | 100–120 | 97 | +44 |
| " 16th | 90–100 | 96½ | +43 |
| " 20th | 98–100 | 97 | +38 |
| " 23rd | 92– 98 | 98 | +37 |
| " 27th | 86–108 | 99 | +26 |
| " 30th | 84–108 | 100 | +42 |

*Remarks.*—On May 8th and 15th had an attack of paroxysmal auricular fibrillation which lasted all day. Did not menstruate while in hospital. No response to dimenformon. On June 6th, partial thyroidectomy by Mr. Basil Hume, with considerable improvement.

CASE 4.—Aged 40, single, occupied in housework. Six months' history of nervousness, tremor of hands, dyspnœa and palpitation on exertion, sweating, tiredness, loss of weight, anorexia, headaches, and nausea with teichopsia. Three months later, exophthalmos and swelling of neck, more marked when menstruating. Menses regular. Received iodine, but forced to discontinue after ten days because of consequent rash and digestive trouble. Previous history: no worries; 18 months before admission, removal of Fallopian tubes and the whole of one and a half of the other ovary. No family history of goitre. On examination: nervous, restless; exophthalmos; fine tremor; chronic tonsillitis; thyroid diffusely enlarged and soft; heart overacting. B.P. 150/80.

Admitted on Jan. 2nd, 1936. Received 50,000 I.U. menformon five times daily by mouth from Jan. 20th to Feb. 9th inclusive.

| Date. | Pulse-rate. | Body-weight (lb.) | B.M.R. (per cent.) |
|---|---|---|---|
| Jan. 7th | 100–120 | 102 | +62 |
| " 11th | 100–120 | 101 | +74 |
| " 15th | 98–114 | 100 | +60 |
| " 18th | 100–116 | 101 | +60 |
| " 22nd | 90–104 | 101 | +79 |
| " 25th | 90–100 | 103 | +67 |
| " 29th | 98–100 | 103½ | +71 |
| Feb. 1st | 98–100 | 104 | +74 |
| " 5th | 98–104 | 105 | +62 |
| " 8th | 90–100 | 107½ | +62 |
| " 11th | 90– 98 | — | +60 |

*Remarks.*—On the two days following the beginning of menformon administration (Jan. 21st and 22nd) she felt sick. On Jan. 28th, nausea all day and vomited four

times. Did not menstruate while in hospital. Towards the end of menformon treatment, patient said she felt less nervous and there was some fall in pulse-rate. Clinical condition and B.M.R., however, unchanged. On March 6th, 1936, partial thyroidectomy by Mr. Keynes, with marked improvement.

CASE 5.—Aged 49, single, cook-housekeeper. Nine months' history of tiredness, palpitations on exertion, and swelling of neck. One month later "influenza"; after this, weakness, nervousness, tremor of hands, dyspnœa, sweating, hot flushes. Received iodine from private doctor. Loss of weight (35 lb. in seven months). Menses regular till cessation six months before admission. No worries. No family history of goitre. On examination: thin, nervous, rather restless; skin moist; no exophthalmos, no stare; tonsils healthy; marked tremor of hands; thyroid diffusely enlarged; heart overacting; B.P. 140/82.

Admitted June 24th, 1935. Received 50,000 I.U. dimenformon intramuscularly daily from July 25th to August 14th inclusive.

| Date. | Pulse-rate. | Body-weight (lb.). | B.M.R. (per cent.). |
|---|---|---|---|
| July 1st .. | 92–112 .. | 106 .. | +75 |
| " 10th .. | 90–106 .. | 106½ .. | +47 |
| " 19th .. | 90–100 .. | 104½ .. | +36 |
| " 22nd .. | 90–104 .. | 105 .. | +50 |
| " 25th .. | 90–108 .. | 105 .. | +46 |
| " 29th .. | 90–100 .. | 107 .. | +34 |
| Aug. 1st .. | 90– 96 .. | 108 .. | +33 |
| " 8th .. | 84– 92 .. | 119 .. | +61 ? |
| " 15th .. | 84– 94 .. | 117 .. | +24 |

*Remarks.*—Possibly slight improvement in clinical condition while receiving dimenformon; fall in pulse-rate and B.M.R., and considerable gain in weight. It appears that the administration of œstrin was accompanied by some improvement in this case. On Sept. 12th partial thyroidectomy by Mr. Hume, with considerable improvement.

CASE 6.—Aged 56, single, engaged in housework. Twelve years previously her mother had committed suicide which upset patient a great deal. Three years later patient's sister died of toxic goitre which developed after mother's death. One year later swelling of neck; no other symptoms. Two years later (six years before admission) gradual onset of tiredness, weakness, dyspnœa and palpitations on exertion, nervousness, prominence of eyes. Did not receive iodine. Loss of weight (14 lb. in one year). Menopause twelve years before admission. On examination: wasted, nervous; skin warm, moist, and pigmented; exophthalmos; fine tremor of hands; thyroid diffusely enlarged and soft; spleen palpable; heart overacting; B.P. 170/80.

Admitted on Feb. 24th, 1936. Received 50,000 I.U. menformon five times daily by mouth from March 19th to April 8th inclusive.

| Date. | Pulse-rate. | Body-weight (lb.). | B.M.R. (per cent.). |
|---|---|---|---|
| March 2nd .. | 100–110 .. | 71 .. | +48 |
| " 7th .. | 80–106 .. | — .. | +90 |
| " 11th .. | 100–110 .. | 72 .. | +56 |
| " 14th .. | 80–100 .. | — .. | +67 |
| " 18th .. | 90–100 .. | 72 .. | +96 |
| " 21st .. | 90– 98 .. | — .. | +67 |
| " 25th .. | 90–100 .. | 75 .. | +60 |
| " 28th .. | 90– 98 .. | — .. | +61 |
| April 1st .. | 90–100 .. | 78 .. | +54 |
| " 4th .. | 80– 90 .. | — .. | +33 |
| " 8th .. | 80–100 .. | 76½ .. | +31 |
| " 15th .. | 90–100 .. | 81 .. | +64 |

*Remarks.*—After three weeks on menformon therapy, patient thought she felt better and less nervous; still occasional palpitations and a feeling of warmth. Tremor slightly diminished; no change in pulse-rate. The basal metabolic rates varied so greatly that little conclusive evidence can be gained from them. On the whole there was little change in the clinical condition. On April 30th, 1936, partial thyroidectomy by Mr. J. P. Hosford, with marked improvement.

## DISCUSSION

The rationale of œstrin therapy in toxic goitre lies in the hypothesis that œstrin inhibits the action of thyrotropic hormone or its production by the anterior pituitary. This presupposes that the symptoms of toxic goitre are the result of secondary hyperthyroidism consequent on an increased secretion of thyrotropic hormone, the supposition being based on the fact that a condition resembling toxic goitre can be produced in laboratory animals by the injection of thyrotropic hormone. Cases of toxic goitre associated with hyperpituitarism have been recorded (e.g., Worster-Drought,[21] Merklen and Aron,[22] Peters[23]) and it is well known that thyroid hyperplasia and increase in basal metabolism occasionally occur in acromegaly. As the growth hormone alone has no thyroid-stimulating property, these changes are probably due to hypersecretion of thyrotropic hormone. That there exists such a hypersecretion of the anterior pituitary in the ordinary cases of toxic goitre, however, has not yet been shown. Drouet [24] found in a number of patients with toxic goitre changes in the field of vision, which he ascribed to pressure on the optic chiasma by an enlarged pituitary, and claimed [25] to have produced amelioration of the clinical condition and reduction in the basal metabolic rate in four cases by irradiation of the pituitary. Similar results have been reported by Merklen and Aron,[22] who noted an increased excretion of thyrotropic hormone in the urine before treatment and a diminished excretion after irradiation of the pituitary. There is little evidence, however, in cases which come to autopsy that there is any structural change in the pituitary.

Thyrotropic hormone has been found in the urine and body fluids of normal persons (Aron,[26] Van Caulert, Aron and Stahl,[27] Hellwig,[28] Giedosz [29]). In myxœdema it is said to be increased (Aron,[26] Paàl,[30] Nielsen [31]), and in toxic goitre to be absent or to occur in extremely small quantities (Aron [26]). The titration of body fluids for thyrotropic hormone, however, is not yet satisfactory, and some investigators throw considerable doubt on all these results (Krogh and Okkels,[32] Smith and Moore [33]). As far as the evidence goes at present, there is no indication that excessive amounts occur in the vast majority of cases of toxic goitre. Merklen and Aron [22] maintain that in a few cases of toxic goitre an increased excretion of thyrotropic hormone is found and that such cases benefit by pituitary irradiation, but that the majority of cases exhibit a diminished excretion of thyrotropic hormone and that in such the primary disturbance is hyperthyroidism. They recommend the examination of the urine in every case of toxic goitre for the degree of thyrotropic activity in order to differentiate those cases which are due primarily to hyperpituitarism.

That œstrin has an inhibitory effect upon the anterior pituitary in the human is suggested by the work of Zondek,[34] Fluhmann,[35] and Frank and Salmon [36] on its action on hypophyseal hyperactivity in castration and spontaneous menopause. As the presence of the gonadotropic principle of the anterior pituitary is far more easily determined in body fluids than the thyrotropic, the results are less controversial. Frank and Salmon observed that in 14 menopausal patients, in whom a hypersecretion of gonadotropic factor was found in the blood and urine, injections of large doses of œstrin resulted in a rapid, though temporary, decrease of gonadotropic factor with amelioration of symptoms. If œstrin be proved definitely to have an inhibitory effect on the production of thyrotropic hormone, the clinical experiments here recorded are evidence against the hypothesis that toxic goitre is caused by a hypersecretion of thyrotropic hormone.

SUMMARY

As there is experimental evidence that œstrin inhibits the activity of the thyroid, and the action or production of the thyrotropic hormone of the anterior pituitary, a trial was made of its value in the treatment of six women with toxic goitre. After a preliminary rest period, four received daily intramuscular injections of 50,000 I.U. of dihydroxyœstrin (dimenformon): these were given for 12 days in two cases and for 21 days in two cases. Two other patients received 250,000 I.U. ketohydroxyœstrin (menformon) daily by mouth for 21 days. There was little or no improvement in the clinical condition or fall in the basal metabolic rate as a result of this therapy.

I wish to thank Prof. L. J. Witts for his constant interest in this work. My thanks are also due to the ward sister, Miss F. E. Evans, for her help in the preparation and treatment of the patients, and Mr. J. Board for the determinations of the basal metabolic rates. I am indebted to Dr. A. N. Macbeth, of the Organon Laboratories, for supplies of menformon and dimenformon.

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ROYAL VICTORIA INFIRMARY, NEWCASTLE-UPON-TYNE.—At a meeting of the house committee on Sept. 26th, it was announced that King Edward VIII. had consented to become patron of the hospital in succession to his late father. Lord Armstrong handed to Prof. Grey Turner on behalf of the house committee an illuminated address containing the signatures of all its members, and Prof. Turner spoke with feeling of his 35 years' association with the hospital. A gift was announced of £500 from a member of the ladies' singing band for the endowment of a cot.

# INHIBITORY EFFECT OF FOLLICULAR HORMONE ON THE ANTERIOR PITUITARY IN HUMANS

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Frank and Salmon[1] have demonstrated that administration of follicular hormone (œstrin) in large doses leads to disappearance of the gonadotropic factor of the anterior pituitary from the blood and urine of women past the menopause. More recently, Zondek[2-4] has shown that in rats the growth and gonadotropic factors of the anterior pituitary can be inhibited by the same means.

Cramer and Horning[5,6] observed that prolonged administration of œstrin leads to a state of hypopituitarism in mice, due, they consider, to a diminution in the number of chromophil cells in the anterior pituitary. As these cells are supposedly responsible for the secretion of the specific hormones of the anterior pituitary, hypofunction leads to a state of hypopituitarism, and evidence of this—such as cachexia, degenerative changes in the adrenals and gonads, hyperplasia of the islets of Langerhans, and atrophy of the thyroids—was found in the mice. In some animals œstrin caused hæmorrhagic chromophobe adenoma, while in others there was merely an enlargement of the gland. It is the diminution in the number of chromophil cells, however, which they regard as the essential factor in their experimental hypopituitarism.

Zondek[3] demonstrated that œstrin, administered in amount sufficient to inhibit the growth and gonadotropic hormones, brought about an increase in the size of the pituitaries of male but not of female rats, and he throws some doubt upon the findings of Cramer and Horning.

Barnes, Regan, and Nelson,[7] and Nelson and Overholzer[8] have used œstrin in attempts to inhibit the "diabetogenic" activity of the anterior lobe of the pituitary. They gave the hormone in large doses to depancreatised monkeys and dogs, and they found that the glycosuria resulting from removal of the pancreas could be controlled by daily injections. Their conclusions are based on the assumption of an antagonism between the anterior pituitary hormone and the internal secretion of the pancreas. But Collens and co-workers[9] had no success when they tried to reduce the hyperglycæmia of human diabetes by the same method.

The factors controlling carbohydrate metabolism are extremely complex, as Langdon-Brown pointed out in his Horsley lecture[10] last year. He referred to Houssay's recent isolation, from the urine, of a diabetogenic hormone that causes a rise of blood-sugar on injection into the experimental animal. But Young[11] thinks it unlikely that any simple diabetogenic hormone exists, and suggests that there are at least three factors involved—a ketogenic, a glycotropic, and a glycogenolytic.

The present paper records an attempt to inhibit not only the gonadotropic, but also the diabetogenic principle of the anterior pituitary by giving large doses of œstrin. The ten subjects chosen were women whose ages ranged from 52 to 83, the average being

62·6. They were all psychotic and had been in hospital for more than three years, and they were all in a chronic stage of their illness, so that endocrine or metabolic fluctuations due to emotional causes were improbable.

TABLE I

*Abolition of Gonadotropic Hormone Excretion by Œstrin*

| Case. | Age. | Diagnosis. | Gonadotropic hormone in urine before and after œstrin injections. | |
|---|---|---|---|---|
| | | | Before. | After. |
| 1 | 68 | Melancholia. | + | 0 |
| 2 | 52 | ,, | + | 0 |
| 3 | 71 | Paraphrenia. | + | 0 |
| 4 | 83 | Senile psychosis. | + | 0 |
| 5 | 68 | Manic depressive. | + | 0 |
| 6 | 59 | Melancholia. | + | 0 |
| 7 | 76 | Senile psychosis. | + | 0 |
| 8 | 69 | Paranoia. | + | 0 |
| 9 | 70 | Senile depression. | + | 0 |
| 10 | 78 | Senile psychosis. | + | 0 |

The "plus" sign indicates more than 50 mouse units per litre of 24-hour specimen of urine.

Before œstrin was given, the amount of gonadotropic hormone in the urine was estimated.

Samples of 60 c.cm. of a 24-hour output of urine were used. To each sample, 240 c.cm. of absolute alcohol was added and the mixture was centrifuged for ten minutes. The precipitate after careful washing with ether to remove any traces of œstrin was dissolved in 7 c.cm. of distilled water and made neutral to universal indicator. Three 21-day-old female mice were used for each test and 0·3 c.cm. of the extract was injected twice daily for six injections. The mice were killed on the morning of the fifth day; the vagina, uterus, and ovaries were examined macroscopically and the ovaries removed for serial section.

TABLE II

*Sugar Tolerance Before and After Œstrin Injection*

| Case. | — | Fasting. | ½ hr. | 1 hr. | 1½ hrs. | 2 hrs. |
|---|---|---|---|---|---|---|
| 1 | Before œstrin.* | 74 | 129 | 125 | 120 | 100 |
| | After course I. | 66 | 104 | 126 | 107 | 100 |
| | ,, ,, II. | 64 | 102 | 105 | 112 | 87 |
| 2 | Before œstrin. | 70 | 113 | 74 | 68 | 72 |
| | After course I. | 82 | 107 | 119 | 123 | 125 |
| | ,, ,, II. | 83 | 66 | 80 | 77 | 82 |
| 3 | Before œstrin. | 69 | 89 | 79 | 76 | 76 |
| | After course I. | 72 | 107 | 116 | 104 | 102 |
| | ,, ,, II. | 64 | 100 | 84 | 81 | 62 |
| 4 | Before œstrin. | 86 | 111 | 132 | 118 | 109 |
| | After course I. | 79 | 121 | 125 | 128 | 128 |
| | ,, ,, II. | 77 | 110 | 148 | 57 | 93 |
| 5 | Before œstrin. | 88 | 118 | 114 | 83 | 63 |
| | After course I. | 88 | 102 | 73 | 82 | 111 |
| | ,, ,, II. | 89 | 95 | 91 | 107 | 117 |
| 6 | Before œstrin. | 83 | 107 | 136 | 97 | 76 |
| | After course I. | 68 | 100 | 116 | 107 | 102 |
| | ,, ,, II. | 73 | 100 | 149 | 124 | 96 |
| 7 | Before œstrin. | 106 | 158 | 131 | 105 | 94 |
| | After course I. | 83 | 90 | 115 | 79 | 72 |
| 8 | Before œstrin. | 70 | 108 | 120 | 106 | 88 |
| | After course I. | 70 | 63 | 56 | 79 | 56 |
| 9 | Before œstrin. | 87 | 155 | 162 | 87 | 67 |
| | After course I. | 91 | 119 | 148 | 137 | 104 |
| | ,, ,, I.† | 100 | 91 | 90 | 99 | 100 |
| 10 | Before œstrin. | 86 | 134 | 123 | 111 | 97 |
| | After course I. | 84 | 164 | 179 | 166 | 148 |
| | ,, ,, I.† | 82 | 121 | 135 | 130 | 114 |

* Blood-sugars in mg. per 100 c.cm. following dose of 50 g. of glucose by mouth. Course I. consisted of 500,000 mouse units dimenformon given in injections of 50,000 M.U. every second day for twenty days. Course II. was 1,000,000 M.U. given in daily injections of 50,000 M.U. for twenty days. In Cases 1 to 6 there was an interval of twenty-one days between courses I. and II. In Cases 9 and 10 there was an interval of six days between the two courses. † Repeated.

The urine of all ten women, tested in this way, gave a strongly positive reaction, the ovaries and uteri of all the mice being much enlarged, while in two cases blood spots indicative of hæmorrhagic follicles were found. The sectioned ovaries showed numerous mature Graafian follicles, and in one case several fully developed corpora lutea were seen.

The patients then received injections of œstrin, and when the tests were repeated none of the mice showed any enlargement of either uteri or ovaries, while section of the ovaries revealed only primordial follicles. In other words, the amount of œstrin given sufficed to abolish the secretion of gonadotropic hormone by the anterior pituitary (Table I.). What effect had it on blood-sugar tolerance? No consistent finding was obtained (Table II.) and even after twenty daily injections of 50,000 mouse units of œstrin (Dimenformon), a consistent fall in blood-sugar level was not obtained. (One mouse unit of dimenformon equals one international unit of œstrin.) That the dosage employed was large enough to be physiologically potent is shown by the fact that 7 of the 10 women developed bleeding from the uterus (Table III.). This, of course, did not represent true menstruation, but merely the proliferative response of the endometrium to the œstrin. No alteration in the clinical state of any of the patients was noted during or after the administration of œstrin.

TABLE III

*Uterine Bleeding After Œstrin Injections*

| Case. | Duration of bleeding (days). | Time after last injection (days). | Case. | Duration of bleeding (days). | Time after last injection (days). |
|---|---|---|---|---|---|
| 1 | 2 | 23 | 6 | 3 | 8 |
| 2 | 5 | 10 | 7 | — | — |
| 3 | 2 | 10 | 8 | — | — |
| 4 | 1 | 22 | 9 | 4 | 6 |
| 5 | — | — | 10 | 4 | 5 |

## SUMMARY

Ten women past the menopause were given varying amounts of œstrin (dimenformon), six receiving 1,500,000 mouse units (M.U.) in 60 days, two receiving 1,000,000 M.U. in 46 days, and two receiving 500,000 M.U. in 20 days. In all of them the excretion of gonadotropic hormone in the urine, which had exceeded 50 M.U. per litre, was abolished. Besides inhibiting the gonadotropic hormone the œstrin produced uterine bleeding in 7 out of the 10 women. Yet it had no consistent effect on glucose-tolerance test. In other words, inhibition of the gonadotropic principle of the anterior pituitary with large doses of œstrin was not accompanied by inhibition of the diabetogenic principle.

We wish to express our thanks to Prof. D. K. Henderson, physician superintendent of the Royal Edinburgh Hospital for Nervous and Mental Disorders, for clinical facilities, and to Prof. F. A. E. Crew for affording us the opportunity of performing the hormone tests in his department. We are indebted to the Organon Laboratories for a generous supply of dimenformon. The cost of the investigation was defrayed by an expenses grant to one of us (T. N. M.) from the Medical Research Council.

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# ACID VALUES IN PURULENT DISCHARGES

## AN INVESTIGATION WITH SOME CLINICAL INFERENCES

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IN pre-Listerian days a description of the physical and chemical characters of pus was an essential component of the surgical case-history. The compellative adjectives "grumous, glairy, sanious, acrid" had their proper connotation, and added to the graphic presentation of the clinical problem. In modern medicine much of this picturesque descriptive ability has been swamped by a flood of sententious Græco-Latin polysyllables: the graphic has become pasigraphic; perhaps also the habit of observation that give birth to these word pictures is in danger of being overwhelmed by technicalities which mask a picture possessing clinical and prognostic significance for the surgeon.

References in standard text-books to the examination of pus from aspects other than the purely bacteriological appear to illustrate this theory; while the organismal and serological characters of pus receive ample study, little attention is paid to its physical and chemical nature. A description of pus, with the statement that it is alkaline in reaction, is contained in the earlier chapters of most text-books, and persists unqualified except possibly when the examination of infected urine is discussed. Here, however, acidity or alkalinity is noted in terms of the reaction of the urine, without emphasis of the fact that when, for example, the observation is made that "the urine may be acid in a pure infection with either *B. coli* or the tubercle bacillus" [1] it is the identity of the infecting organism, not the reaction of the urine to it, which determines this chemical state.

*Previous investigations* do not appear to be numerous. Winnett Orr, in his treatise outlining his widely adopted vaseline-pack-immobilisation technique,[2] makes scant reference to the bacteriology of the wounds, and almost none to the chemistry. Baer's account of his early experiments in the treatment of osteomyelitis by the use of maggots [3] states that bacteriological examination of the maggots and of the wounds showed that in addition to ordinary pyogenic bacteria, there was frequently contamination with anaerobic organisms, both those of gas gangrene and tetanus; he noted that acidity was present and that this disappeared after three weeks' treatment by maggots. Albee, after d'Herelle, describes [4] the preparation and use of a bacteriophage obtained from the pus, but makes no reference to the chemical reaction of the discharge. An investigation by the late Major S. W. McLellan, R.A.M.C., in France in 1914,[5] showed that gas-gangrene infected wounds frequently discharged pus of an acid character, particularly when recovery was clinically probable, and he attributed this acidity to proteolytic action by bacterial agency. The publication in 1932 of Stirling's research establishing the acid character of the primary hæmatoma in fracture cases [6] led to my inquiry into the reaction of purulent discharges met with in hospital practice, particularly in cases of bone infection treated by Winnett Orr methods.

(*Continued from previous page*)

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### THE PRESENT INVESTIGATION

*The pH scale.*—A total of 314 examinations of pus from 175 cases has been made, of which 78 were taken from cases treated by the Winnett Orr method, and the pH value was obtained in 40 specimens. A few data on the determination of alkaline-acid values may be permitted.

(*a*) Acidity or alkalinity of a fluid depends on the free hydrogen-ion content. (*b*) This hydrogen-ion content is calibrated to a scale, the pH scale, wherein the figure 7, which represents the hydrogen-ion content of water, denotes the point of neutrality. (*c*) Acid values are expressed by the figures below 7, and alkaline by figures above 7, and to decimal points of these. (*d*) Fresh human blood, being alkaline, shows a value of pH 7·4; clinical evidences of "acidosis" appear if the pH of blood falls to 7·2.

The *objects* of the present investigation were, first, to confirm the predicate that in general pus is alkaline in character; second, to inquire whether, and in what circumstances, pus became acid in reaction; and, third, if this did occur, what clinical significance such a phenomenon might possess. For these purposes the pus from 150 cases of whitlow, boil and carbuncle, and discharging septic wounds (Group 1) has been examined on 236 occasions; and from 25 cases of bone infections treated by the Winnett Orr method (Group 2). Details of these observations are contained in Table I.

TABLE I

| Cases. | No. | Examinations. | Reactions. | | |
|---|---|---|---|---|---|
| | | | Alkaline. | Acid. | Neutral. |
| GROUP 1 | | | | | |
| Whitlow .. .. | 54 | 86 | 78 | 0 | 8 |
| Boil and carbuncle | 74 | 100 | 98 | 0 | 2 |
| Septic wounds .. | 22 | 50 | 46 | 2 | 2 |
| Totals .. | 150 | 236 | 222 | 2 | 12 |
| | | | 94 % alkaline. | | |
| GROUP 2 | | | | | |
| Osteomyelitis .. | 16 | 48 | 4 | 42 | 2 |
| Septic compound fracture .. | 5 | 18 | 2 | 14 | 2 |
| Septic wounds .. | 4 | 12 | 0 | 11 | 1 |
| Totals .. | 25 | 78 | 6 | 67 | 5 |
| | | | | 86 % acid. | |

These analyses show therefore that while purulent discharges in normal conditions are alkaline, the discharge in cases treated by the Winnett Orr method is usually acid at the first dressing.

*pH values of pus.*—The alkalinity of pus, as usually met with, having been confirmed, and the noteworthy fact of the acidity of pus in certain circumstances having been established, an attempt was made (*a*) to ascertain the actual pH values in each group, and (*b*) to determine the time factor in the production of acidity in Group 2. These analyses were done partly by a firm of analytical chemists using the potentiometer, and partly by means of colorimetric tubes, buffered for colour against the colour of the

pus under examination. In Group 1 cases the dressing was removed and the pus aspirated by pipette; in Group 2 cases the pipette was insinuated between the pack and the tissues, so as to cause minimum disturbance of the pack. Forty estimations of this character were made, the results of which are shown in Table II.

TABLE II

| Cases. | Examinations. | Dressing interval (days). | pH value. | | |
|---|---|---|---|---|---|
| | | | Highest. | Lowest. | Average. |
| GROUP 1 10 | 10 | 2 | 7·8 | 7·1 | 7·6 |
| GROUP 2 10 | 10 | 9 | 7·0 | 6·6 | 6·8 |
| | 10 | 21 | 6·9 | 5·8 | 6·5 |
| | 10 | 42 | 6·4 | 5·2 | 5·9 |

These analyses show (*a*) that the average alkalinity of pus discharges in Group 1 is slightly higher than that of fresh blood; and (*b*) that the acidity of discharges in cases treated with the vaseline pack increases at a rate roughly proportionate to the length of time the pack is left in situ.

*Physiological effect of acidity.*—The clinical experience of those who employ the vaseline pack cum immobilisation technique gives the impression of its possessing two inherent advantages—viz., (*a*) that separation of sequestra is accelerated, with absence of involucrum formation; and (*b*) that rapid obliteration of cavities by growth of granulation tissue takes place. It is reasonable to infer that as the acid primary hæmatoma in a fracture dissolves the fixed calcium in the bone-ends [6] so the acid pus dissolves the calcium in the adherent necrotic bone

TABLE III

| Case. | Initial fluid content of cavity (c.cm.). | Fluid content at three weeks (c.cm.). | Amount of fluid displaced (c.cm.). |
|---|---|---|---|
| GROUP 1 1 | 29 | 26·5 | 2·5 |
| 2 | 16 | 12·5 | 3·5 |
| 3 | 21 | 18·5 | 2·5 |
| Averages | 22 | 19·5 | 2·5 |
| GROUP 2 1 | 27 | 21·5 | 5·5 |
| 2 | 33 | 26·5 | 6·5 |
| 3 | 34 | 28·5 | 5·5 |
| Averages | 31 | 25·5 | 5·5 |

of a sequestrum. But may not the acidity have a further effect, to stimulate the generation of primary mesoblastic tissue, with resultant acceleration of granulation tissue growth? It is difficult to be dogmatic in this matter; elimination of the cell trauma involved in daily dressing of cavities must play some part in the relative rapidity with which pack-treated cavities close. But I believe that a more important reason for this rapidity of growth is the stimulation of mesoblastic tissue by an acid environment shown to exist in these cases. An endeavour was made to compare the rate of growth of granulation tissue in the two groups of cases. The fluid content of the cavity in three cases in each group was measured, and the rate of "displacement" of the fluid by growth of granulation tissue determined. As far as possible clinically similar cases were selected. The results are shown in Table III. The interval between estimations was three weeks in each case, and the amounts are calculated to the nearest 0·5 c.cm. From these figures, no more can be deduced than that under the vaseline-pack-immobilisation technique the rate of growth of granulation tissue is more than double the "normal" rate; but it is legitimate to suspect that the acidity of environment in the wound is to some extent responsible for this accelerated growth of granulation tissue.

*Nature of the acidity.*—The source and nature of the acid elaborated in these cavities is obscure. Reactions for lactic and butyric acid have been obtained in most specimens, the latter possibly accounting for the characteristic malodour. Normally these acids develop in two ways in the body, either as products of tissue metabolism, or elaborated by the action of the proteolytic group of saprophytic organisms (*B. welchii*, etc.) which "have been found to split proteins to amino-acids," [7] thus giving an acid reaction to the discharge. A number of bacteriological examinations of the later discharges have been made, but these are incomplete. *B. proteus* is frequently found, an organism with marked proteolytic power in certain circumstances; *B. welchii* and *B. tetani* have not been isolated. No more can at present be advanced than the suggestion that the acidity is the result of two processes, tissue autolysis and organismal proteolysis. A specimen bacteriological report is given (Dr. Cookson):—

"1. *Short-chained streptococci* were seen; these were scanty in films and grew with difficulty. They were non-hæmolytic and were, I take it, the usual skin cocci.

"2. *Staphylococci* were seen; these were very scanty. Both *albus* and *aureus* were present, the latter very scanty both in films and in first culture. The *S. aureus* showed very well-marked hæmolytic powers and the culture developed a bacteriophage.

"3. *Diphtheroids*, these were ordinary skin diphtheroids.

"4. *Gram-negative rods* seen in films and appeared to be the predominant organism. These rods turned out to be *B. proteus*; milk was coagulated with acid formation and then proteolysis. Dextrose and saccharose were fermented with acid and gas production, but lactose was untouched; gelatin was liquefied.

"It was noteworthy that the total number of organisms present was comparatively small; that no spore bearers or obligatory anaerobes were found. In regard to *B. proteus*, this organism is of pathogenic significance of a secondary nature; it occurs, as you know, in the bladder, &c. In regard to the formation of decomposition products from protein of a putrefactive nature, Rettger and Newell [8] consider that *B. proteus* does not produce these. I gather, however, that this is not an opinion shared by all."

## CLINICAL DEDUCTIONS

What clinical deductions, if any, may legitimately be drawn from the foregoing observations? The following are suggested.

1. Pus in a wound is normally alkaline in reaction.

2. Pus in a wound treated by the Winnett Orr method undergoes a change to acidity.

3. This acidity is a prime factor in hastening the separation of sequestra, and inhibiting the ectopic deposit of calcium and formation of involucra.

4. It is justifiable therefore to employ in the pack lotions of a definite acid character; novocain and procain, being hydrochlorides, possessing a pH value

below 7, are suitable agents, having in addition their desirable analgesic effect.

5. It is possible (? probable) that the acidity acts as a stimulus to formation of primary mesoblastic tissue, and the growth of granulations, and accelerated wound healing.

There can be little doubt that the spread of immobilisation methods in prevention and treatment of wound infections constitutes a considerable advance in the technique of treatment. Reports on these however have been predominantly clinical in character; further chemical and bacteriological research is desirable in view of the widespread adoption of Winnett Orr methods.

My acknowledgments are due to Dr. H. A. Cookson, pathologist, and Dr. G. F. Walker, consulting physician, both of the Royal Infirmary, Sunderland, for help in the investigations; to Dr. J. F. Halliday, radiologist to the Monkwearmouth Hospital, Sunderland, for constant radiological assistance; and to Messrs. A. S. Bean and J. Brown, analytical chemists of Sunderland, for their chemical reports.

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## A CASE OF CROHN'S DISEASE

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IN 1932 Crohn, Ginzberg, and Oppenheimer recorded [1] 14 cases of "regional ileitis." They defined this condition as a disease in which the terminal 12–14 in. of the ileum became cicatrised, subsequent to a chronic inflammatory condition of unknown ætiology. The ileocæcal valve itself was the site of maximum involvement. They noted ulceration of the mucosa and disproportionate hypertrophy of the connective tissue which frequently led to intestinal obstruction associated with the formation of multiple fistulæ. These communicated either with the lumen of the large intestine or occasionally tracked anteriorly through the abdominal wall. The condition occurred in young adults and was benign; those patients who survived operation made a complete recovery.

Crohn published a second paper [2] in which he claims to have collected in three years 30–40 cases of this disease. In reviewing his definition of regional ileitis he stresses that *any* portion of the ileum might be the site of maximum involvement, not necessarily the ileocæcal valve. He had seen one case in which only 1 in. of gut had been thickened; another case, in which an anastomosis of small gut to colon had been performed, had to be operated on again at a later date on account of a second constriction in the proximal end of the ileum. Crohn also records regional ileitis occurring in a sister and brother and discusses the possibility of a congenital predisposition, the likelihood of some transmissible causative agent, or the probability of a purely accidental occurrence. Details are carefully given of a case in which only the uppermost segment of the ileum and a considerable area of the lower jejunum were thickened and engorged. Histological examination of the adjacent gland, however, revealed miliary tubercles, so that Crohn classified this case as one of primary tuberculous enteritis.

Kantor in 1934 demonstrated [3] the value of radiography in the diagnosis of 6 cases of regional ileitis. Of special note he pointed out (*a*) the filling defect proximal to the cæcum, (*b*) the abnormality in the contour of the last filled loop of the ileum, (*c*) dilatation of the iliac loops proximal to the lesion, (*d*) the "string sign" (a term, referring to the barium in the narrowed lumen, borrowed from A. W. Crane). Diagnosis was confirmed by operation; 5 cases recovered, but the sixth died from a perforation found at operation.

Galambo and Mittelmann in 1935 [4] gave the details of 2 cases in which Crohn's disease was diagnosed before operation from the clinical and radiological evidence. In the authors' opinion exposures taken at the second, third, and fourth hour after intake of the barium meal are most useful. In both cases uneventful recovery took place after resection of the diseased gut. At operation the glands in one case were observed to form a solid mass in the short end of the mesentery, almost immobilising the terminal ileum. Histological examination of the thickened ileum showed chronic inflammation in the mucosal, submucosal, and muscular layers. Secondary lymph follicle formation and reticulum cell hyperplasia were observed in the submucosa, and the muscle layers were hypertrophied. Stress was laid on the absence of caseous necrosis, giant-cell reaction, epithelioid tubercle formation, or mononuclear change within the lymph follicles.

Wright in 1935 showed [5] 2 cases of Crohn's disease at the Medical Society of London. In one he had resected the gut, in the other he had made a transverse anastomosis. He reported successful results by short circuiting the gut in 5 other cases. No histological examination of the resected intestine is recorded. In the discussion at that meeting Hunter said he had seen one case in which the resected gut had been labelled lymphadenoma, and in a second case the piece of intestine was so firmly thickened that it "stood up on end like a ruler"; as the patient was too ill for a resection to be performed an anastomosis was made. Two cases, in which the ileocæcal valve was mainly involved, were recorded by Cope and also by Simpson-Smith. Wright in his reply mentioned that Anderson and Grey, working at a sanatorium in Scotland, had found the disease in tuberculous subjects, and in their cases tubercle bacilli had been demonstrated in the tissues of the gut by animal inoculation. Wright did not wish, however, to infer that Crohn's disease was due to the tubercle bacillus but suggested that breaches in the continuity of the mucosa had set up a hyperplastic response producing a non-specific granuloma.

Barbour and Stokes have recently reviewed [6] the literature of chronic cicatrising enteritis, and give careful details of a case in which multiple constrictions were found post mortem in 21 in. of small intestine. The constrictions were present in 13 places of thickening while 7 intervening portions of ballooned, thin-walled intestine bore no constant relation to the constricted parts. The mesenteric lymph nodes were not enlarged, and nowhere was any evidence of tuberculosis found. Microscopic examination showed more acute pathological change in the lesions proximal to the ileocæcal valve. The mucous membrane showed ulceration, the submucosa contained small abscesses and

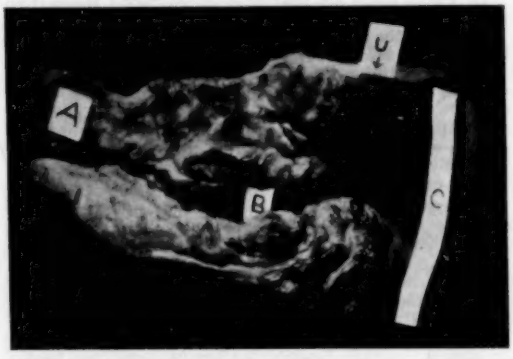


FIG. 2.—The resected small intestine showing (A) the greatly thickened gut wall; (B) the narrow lumen; (C) the thin wall of the distended part; and (U) an ulcer, from which the sections for Fig. 3 were taken.

fibrous tissue was present in excess in the muscle coats. Foreign body giant cells were numerous between the long and circular muscle coats in those parts where the reaction was less acute. The lymphoid tissue was not hypertrophied.

Rosenblate, Goldsmith, and Strauss diagnosed [7] a case of Crohn's disease on clinical and radiological evidence, in which an uneventful recovery was made after resection of the cæcum and 18 cm. of ileum. The gut was thickened, especially in the region above the ileocæcal valve, and the entire mucosa was polypoid. In such cases where the disease extends to the cæcum, the authors suggest the use of the term "ileocolitis ulcerosa chronica."

## CASE REPORT

The patient was a male aged 31 years. Discomfort in the epigastric region was first noticed eighteen months before admission to hospital. Vomiting, which occurred about twice a week, relieved the pain. There was anorexia and loss of weight, gradual increase of weakness and pallor. The patient stated that he had never noticed blood or mucus in his stools. The fæces became very loose 3 months before admission, and the desire to defæcate increased to ten or fifteen times per day. The incidence of vomiting increased, and hospital advice was sought. The patient was seen by Dr. K. Eckenstein in the out-patient department of the French Hospital. Excessive abdominal distension and peristalsis was observed, and he was admitted as a case of chronic intestinal obstruction.

*Family history.*—Within the last year a married sister developed intestinal trouble. She was operated on by Mr. Harold Wilson, who excised 18 in. of small intestine. The diagnosis of tuberculous enteritis was confirmed by histological examination. There is no other case of tuberculosis in the family, both parents and two other sisters are well.

*On admission.*—Radiograms of a bismuth meal and rectal enema failed to localise the site of obstruction, but demonstrated the extensive distension of the small intestine (Fig. 1). No abnormalities were found on examination of the urine. Blood-urea: 30 mg. per 100 c.cm. Wassermann, Kahn, and Meinicke reactions were negative. Red blood-cells: 4,340,000 c.mm. Hæmoglobin: 78 per cent. Colour-index: 0·9.

*First operation.*—Jan. 14th, 1936. The abdomen was opened through a right lower paramedian incision as the obstruction appeared to be in the terminal ileum. The whole of the ileum was distended and œdematous, the distension being progressive until it terminated abruptly in a large mass which was firmly adherent to the floor of the rectovesical fossa. Beyond the mass there remained about 5 in. of normal ileum passing into a normal cæcum. The mass consisted partly of the tumour shown in Fig. 2 and partly of two coils of distended ileum, in the separation of which a spontaneous ileo-ileal fistula was found. The fistula was excised and the two ends invaginated. With difficulty a line of cleavage was found, and the mass was separated from the pelvic peritoneum and brought up into the incision. In the course of doing so, a hole occurred in the mass through which a little fæcal contents escaped. This was quickly stopped, and a hot pack placed in the pelvis to prevent oozing from what appeared to be an inflammatory surface. The mass was widely resected and a side-to-side anastomosis performed with a proximal valvular ileostomy. Although there was such a disparity in the size of the two pieces of ileum an immediate resection combined with anastomosis seemed justified, as the obstruction was chronic and not acute. The pelvis was drained, and by a second stab incision another soft rubber tube was placed down to the anastomosis. The abdomen was closed in layers with the pelvic and ileostomy tube draining at the lower end.

The ileostomy drained for some days; then the bowels acted with the aid of enemata and continued to do so, but very irregularly. The ileostomy showed no sign of closing, and drainage also occurred through the tube down to the anastomosis, showing that it had been unduly

FIG. 1.—Radiogram of barium enema, showing great distension of small intestine.

optimistic to perform such a junction. By March 24th, although the bowels were acting spontaneously, the ileostomy showed no sign of closing and the discomfort that this produced was naturally acute.

*Second operation.*—March 24th. It was therefore decided to explore again. A left paramedian incision was made and the ileum identified at its lowest point. It entered a dense adherent mass consisting of the ileostomy, the anastomosis, and, in addition, what appeared to be a small spontaneous ileo-ileal fistula similar to that found at the first operation. As the separation and straightening out of this mass appeared too formidable an undertaking, an anastomosis between ileum and transverse colon was carried out, a very large stoma being made and the ileum slightly angulated to discourage the further passage of fæces towards the ileostomy.

The bowels acted spontaneously on the fourth day and have done so regularly since. The patient was discharged from hospital six weeks later apparently in excellent health, but a small dressing was required for a short time as there was a very slight purulent discharge from the lower end of the original right paramedian incision. This sinus finally healed.

*Pathological report.*—Fig. 2 is from a photograph of the 5 in. of small intestine that was sent to the pathological department. The specimen represented ileum 5 in. proximal to the ileocæcal valve, and shows two distinct portions, the first in which the wall of the gut (A) is ½ in. in thickness and the diameter of the lumen (B) measures ½ in., the second in which the wall of the gut is thin and distended so that the lumen here (C) is 2½ in. in diameter. The thickening abruptly terminates and there is a large ulcer (U) due to retention of fæcal matter above the constriction.

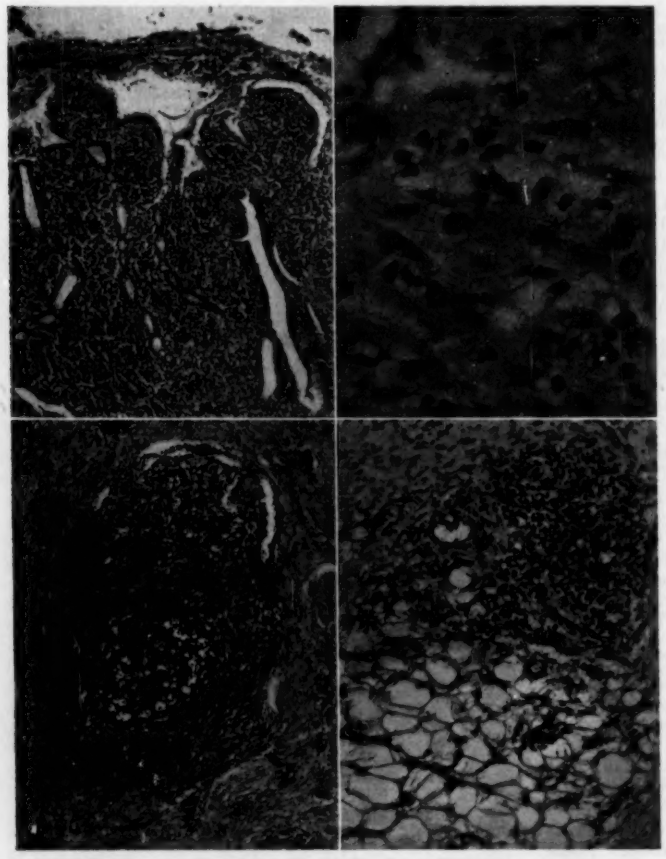

FIG. 3.—Photomicrographs of a single section of the ulcer in Fig. 2, passing outwards from the mucosa. Upper left: the surface mucous membrane has been shed; the remaining glandular epithelium is supported by a very cellular stroma which has been acutely inflamed; the predominant polymorphs, seen within the numerous dilated blood-vessels, are so abundant that they completely obscure the connective tissue, producing the picture of an early abscess. (× 45.) Upper right: high power magnification (× 360) of submucosa; less acute inflammation; less cellular, young fibroblasts present, with a few polymorphonuclear and plasma cells in the œdematous background. Lower left (× 45): one of the many circular aggregations of cells seen throughout the submucosa and muscle and fatty tissue, which at once suggest tubercle, but contain no typical epithelioid cells or giant cells, and show no central clearing or necrosis—on the contrary the cells are most densely packed at the centre; the cells are chiefly small lymphocyte and reticulum cells; the apparent vacuoles are formed by drawn out eosinophil processes of the latter, whose nuclei are pale staining with a deeper staining nuclear membrane, many of the nuclei contain two nucleoli, and some are in active mitosis (sections stained by Ziehl-Neelsen's method fail to reveal acid-fast organisms). Lower right: the small round-celled inflammation extending into the fatty tissue of the mesentery. (× 85.)

In Fig. 3 there are four photomicrographs taken from one section. They represent a series of fields passing outwards from the mucosa, through submucosa and muscular layers to the serous coat, at the site marked (U) in Fig. 2.

After examining several slides one foreign body giant cell was found containing nine nuclei at one side of the cell. It was situated in fibrotic tissue and probably resulted from the inclusion of a small particle of fæcal matter which was entrapped in an ulcer and thence conveyed by the lymphatics to the deeper tissue, where it became encapsuled in the process of healing.

*Post-operative pathological investigations.*—Three months after the first operation: Red blood-cells, 5,200,000 per c.mm.; hæmoglobin, 102 per cent.; colour-index, 1·0.

*Mantoux reaction.*—0·2 c.cm. saline, as a control, was injected intradermally on the flexor surface of the right forearm, and 0·2 c.cm. 1/100,000 old tuberculin and 0·2 c.cm. 1/10,000 old tuberculin were injected intradermally on the flexor surface of the left forearm. After 24 hours the lowest tuberculin dilution had caused some local redness and after 48 hours there was redness and induration of 10 mm. and 24 mm. to 1/100,000 and 1/10,000 old tuberculin respectively. The discoloration and induration still persisted when the patient left for a convalescent home seven days later.

## SUMMARY AND DISCUSSION

A case of regional ileitis has been described which conforms clinically and pathologically to Crohn's disease.

In view of the case which Crohn (1934) considered "regional ileitis" until the regional lymph gland gave conclusive evidence of tuberculosis, it seems a wise precaution, wherever possible if this condition is suspected, that a gland should be removed for pathological investigation.

Although there is no evidence of tuberculosis in the ileum described in this paper, the investigation is deemed incomplete without the glandular examination, especially as the patient reacted positively when tested intradermally to 1/100,000 old tuberculin. The occurrence of tuberculous enteritis in the patient's sister is worthy of note in this connexion.

This case is being recorded to stress the importance of examining the intestine and regional lymph glands for tuberculosis both histologically and bacteriologically.

I wish to express my thanks to Dr. Eckenstein for permission to publish this case, to Dr. E. ff. Creed for giving his opinion on the sections, and to Mr. Geoffrey Parker for the description of the operation.

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# LEFT-SIDED HEART FAILURE WITH PULMONARY ŒDEMA

## ITS TREATMENT WITH THE "PULMONARY PLUS PRESSURE MACHINE"

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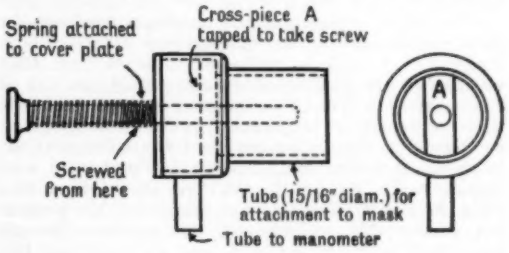
Acute pulmonary œdema of circulatory origin must be due to incoördination between the right and left ventricle such that the volume of blood delivered per minute into the pulmonary circulation is not completely passed on into the systemic circulation by the left ventricle. Congestion of the pulmonary circulation with local rise of blood pressure must follow, leading to acute pulmonary œdema. A case of this kind with myocardial degeneration was investigated about ten years ago by Campbell and Poulton [1 2] in which evidence was brought forward that during muscular exercise there was acute pulmonary congestion lasting some minutes. Further, Crowden [3] showed by X ray examination of the chest that the amount of blood in the pulmonary circulation could be varied by certain respiratory exercises. Thus in Müller's experiment—attempted inspiration against a closed glottis—the amount of blood in the chest was increased and the heart was enlarged, which is the converse of Valsalva's experiment—attempted expiration against a closed glottis—in which the chest was emptied of blood and the heart became small.

I should like to thank Prof. J. Plesch [4] for suggesting to me the principle of the "pulmonary plus pressure machine" by which the pressure in the air-passages of the lungs can be increased, so as to oppose the increase of intrapulmonary blood pressure. The effect will be to push the blood already present in the pulmonary circuit onwards through the left ventricle and at the same time to oppose the delivery of more blood by the right ventricle; it will be of special importance when the patient's respiration is "rattling," for this is considered by Plesch to be a compensatory mechanism to hinder the œdema; the patient makes inspiratory gasps which are short, since the diminished pressure during inspiration is dangerous tending to cause œdema, and he makes prolonged rattling expirations through contracted bronchi and glottis, which keep up the pressure, acting in the opposite direction.

The machine as eventually designed consists of a blower—an Electrolux or Hoover vacuum cleaner answers the purpose, or the smaller Hoover "dustette" might be adapted—which supplies air under positive pressure through an opening to a mask; the air escapes through a valve which is fitted into another opening in the mask. The valve* (see Figure) has a metal disc which is held up against the opening by a spring which can be tightened by turning the screw. On its proximal side there is a tube which leads to a manometer; this is a bottle of about 10 oz. containing coloured fluid to a depth of about an inch; it is hung up beside the bed. Two tubes pass through the cork, one beneath the fluid, the other just inside the bottle; the latter tube is connected to the valve. The pressure in the air passages is regulated by the strength of the spring and by the rate of flow, and the two should be adjusted so that there is an insignificant fall in pressure in the manometer during inspiration. A plus pressure of 6 in. is about the maximum that can be tolerated; often it will be better to try half this amount. The ordinary vacuum cleaner used as a blower usually gives too big a flow; it is cut down by an adjustable resistance or a machine of oversize voltage may be used. When the household vacuum cleaner is employed the machine should be run for some minutes first of all to get rid of dust; then a new flexible tube should be fitted, and there should be a cotton-wool filter. If


Spring attached to cover plate
Cross-piece A tapped to take screw
A
Screwed from here
Tube (15/16" diam.) for attachment to mask
Tube to manometer

the stream of air is too rapid the patient may complain of the air being cold. Apart from cutting down the air it has been warmed by putting a hot-water bottle in the compartment for the dust bag of the electrolux or by sucking air from in front of a radiator or electric fire.

### CLINICAL USES

An attack of pulmonary œdema, presenting typical features, is one of the uncommon emergencies in medicine, so that if the use of the plus pressure machine were confined to this condition, it would not be of much practical use. Consequently the machine was tried in other cases. In the first place it was found to bring relief in paroxysmal dyspnœa (cardiac asthma); this was a surprise and yet recent clinical as well as experimental evidence has been accumulating that pulmonary congestion, if not œdema, may be a factor in cardiac asthma. For instance, as Prof. John Ryle has pointed out to me, a patient with typical pulmonary œdema may give a previous history of paroxysmal breathless attacks; the relation between the two has been dealt with at length by Weiss and Robb.[5] Then in some of the cases I have observed marked epigastric pulsation, while the radial pulse and apex beat were weak—physical signs that would be expected when the right ventricle was beating vigorously and the action of the left ventricle was weak. Experimentally, Calhoun and Harrison [6] have found that forced breathing leads to a large increase in the absorption of oxygen from the inspired air; the only possible explanation is that the flow through the pulmonary circuit is increased; in some cardiac patients during forced breathing the left ventricle did not succeed in getting rid of the blood because it was found that the vital capacity was diminished and occasionally pulmonary œdema was observed. They suggested that such pulmonary œdema might follow an involuntary deep breath after coughing, or a series of deep breaths in the dyspnœic phase of Cheyne-Stokes' breathing, especially at night. Now if Plesch's hypothesis of a compensating reflex mechanism is correct—and it is only a hypothesis—this pulmonary congestion or œdema will itself increase the breathlessness, and there will be a vicious circle. Once remove the congestion or œdema and the breathlessness will stop. The fact that the pulmonary plus pressure machine does remove the breathlessness suggests that this line of argument holds good.

Success in cardiac asthma suggested the trial of this method in bronchial asthma. Presumably it

* Down Bros., St. Thomas's-street, S.E., supply the apparatus.

would be no use where bronchial spasm was the sole cause of the attack, though in this condition the right ventricle would also be beating more strongly than the left; but if œdema of the bronchial mucous membrane was the cause of the attack some success might be expected. Actually some patients with asthma benefited and others did not. One patient (Case 13) made a dramatic recovery from a severe attack.

The action of the machine on the normal subject is being investigated in collaboration with Dr. S. S. Suzman.[7] It will be sufficient to state here that changes in the electrocardiogram and in the size of the heart have been observed, and that an asthmatic type of breathing is produced; the mean position of the diaphragm is lowered and the volume of air in the chest is increased, expiration is prolonged, and inspiration is shortened. In two cases of asthma (Nos. 19 and 20) the note was made that the patient felt comfortable while using the machine though the attack was not arrested, and on removing the mask the attack went on as before. Is it possible that increased tension of the bronchial muscle with stretching of sensory nerve-endings may be the cause of the sensation of tightness during an attack and that by increasing the resistance to expiration by means of the machine, the bronchial muscle itself temporally relaxes and so the sensation of tightness is abolished?

The treatment was observed by myself personally at least once in all the following cases (except Nos. 9, 12, and 22), and by the resident medical officer or house physician at other times. The optimum pressure must be determined experimentally, using the patient's feelings as a guide. The use of too high or too low pressures may account for some of these later unsuccessful results. Thus in Case 9 the patient had been taught to adjust the pressure himself; he felt distressed when it was about 4½ in., but obtained relief when it was 2 in. However, if in the course of treatment the right ventricle begins to fail no further success with the machine would be expected, as there would be generalised heart failure. This apparently took place in Case 4. Since the machine acts by putting a strain on the right ventricle its use may be overdone as in Case 3, when severe angina was brought on; obviously its use requires care. In Cases 6 and 11 it was used satisfactorily for five or ten minutes an hour in an attempt to ward off attacks; but there is not sufficient evidence that it acts as a preventive.

The application of increased or diminished pressure to the gases in the lungs is an old procedure. A description of apparatus with reference to the older literature will be found in Theodore Williams's article on "artificial aerotherapeutics" in Allbutt and Rolleston's "System of Medicine."[9] The object in view appears to have been to inflate or deflate the chest and lungs, and sometimes to carry out these processes alternately. It is possible that apparatus of this kind has been found useful, owing to changes in circulation, such as have been described in this paper. Pressure chambers which surround the whole patient and which are in use at the Brompton Hospital and places abroad act solely by increasing the concentration of oxygen, which the patient is breathing.

## CASES

### PAROXYSMAL DYSPNŒA (CARDIAC ASTHMA)

CASE 1.—Man, aged 54. (Lewisham Hospital, December, 1934.) Bronchitis since 1928. Now breathless attacks each night during period of treatment; he obtained relief. Apparently the machine was not so useful in later attacks.

CASE 2.—Man, aged 48. (Lewisham Hospital, January, 1935.) Bronchiectasis and polycythæmia. Tried machine three or four times and felt relief; afterwards complained of the coldness of the air. Died a year later with bronchopneumonia.

CASE 3.—Man, aged 56. (National Hospital for Diseases of the Heart, under care of Dr. Campbell, June, 1935.) Mitral stenosis, hyperpiesia, auricular fibrillation beginning three years back. Kahn test negative. Severe attack at night was relieved. Used the apparatus too much the next day, when he was not very breathless, and this brought on a severe attack of angina.

CASE 4.—Man, aged 64. (Guy's Hospital, 1935, No. 5319.) Hyperpiesia, intermittent claudication, mild diabetes; occasional breathless attacks, not specially nocturnal. Wassermann and Kahn tests negative. Machine was successful in one sudden severe attack of breathlessness which was relieved after about five minutes; but later on it was of no use probably owing to general heart failure. Patient is alive now a year later and has just recovered from an attack of heart failure. Some relief in oxygen tent.

CASE 5.—Man, aged 45. (Guy's, 1935, No. 3280.) About fifteen years of shortness of breath on exertion and bronchitis. Nocturnal attacks. Recent attack began ten days previously when out walking; but he managed to keep at work until three days before admission. Auricular fibrillation with pulse deficit, orthopnœa; rhonchi not very marked; no œdema of legs and back. The right ventricle was felt as a firm lump in the epigastric angle beating vigorously at 140. Radial pulse weak and uncountable. Heart-rate fell to 116 eight minutes after applying mask; radial pulse was stronger in five minutes, and was counted at 92 in 10 minutes and 85 in 16 minutes. This was a dramatic recovery from a very severe attack. Wassermann, Kahn negative.

CASE 6.—Man, aged 52 (Guy's, 1935, No. 8689). Old coronary thrombosis, followed by change of electrocardiogram from left towards right ventricular preponderance. Hyperpiesia, gallop rhythm. Wassermann and Kahn tests negative. Nocturnal dyspnœa for a year. Felt benefit and improved with machine; later used it for ten minutes at a time, three times a day.

CASE 7.—Man, aged 60. (Guy's, 1936, No. 3264.) Acute pulmonary œdema four years ago and again one year ago. Electrocardiogram: auricular fibrillation and left ventricular preponderance. Blood pressure: 160/100. Frothy sputum noted after an attack of dyspnœa. No nocturnal attacks. Wassermann and Kahn tests negative. Present attack began just before admission. When breathless, machine gave him relief; used it several times.

### CHEYNE-STOKES BREATHING

CASE 8.—Man, aged 51. (Guy's, 1935, No. 268.) Auricular fibrillation, cerebral embolism, right hemiplegia. Unconsciousness gradually came on with Cheyne-Stokes' breathing. Condition desperate. With machine pulse improved; the Cheyne-Stokes' breathing was less pronounced and disappeared for half an hour. Patient did well with machine from 4 P.M. till midnight, when it was removed. Died next day.

CASE 9.—Man, aged 67. (Guy's, 1936, p. 6037.) For a year breathlessness on exertion; nocturnal dyspnœa; there has been a little œdema of feet. Occasional attack of pain in chest. Hyperpiesia; myocardial degeneration. Width of heart 18 cm. Electrocardiogram: partly inverted T waves and notched ventricular complexes. Congestion of lungs. Blood-urea 43 mg. per 100 c.cm.; Wassermann and Kahn tests negative. Relief from nocturnal attacks, when pressure was correctly adjusted (see text). Breathlessness increased and patient died in coma with cyanosis and Cheyne-Stokes' breathing. Post mortem: coronary sclerosis with recent thrombosis; commencing widespread infarction of left ventricular wall; the absence of pain at the end was remarkable. There was no pulmonary or systemic venous congestion. Was this due to the acuteness of the failure, which pro-

duced cerebral anoxhæmia alone? A similar case was investigated and is described elsewhere.[8]

BRONCHIAL ASTHMA

CASE 10.—Woman, aged 56. (Guy's, 1934, No. 10025.) Ayerza's disease. Polycythæmia. Asthma since 30 years old. Positive to feathers, pollen, and dust. Machine successful at first; not so good later on.

CASE 11.—Male, aged 49. (Guy's, 1934, No. 9135.) Asthma began nine months previously following bronchitis. Liked machine, and pulse-rate fell during treatment. Later used it for ten minutes every hour.

CASE 12.—Woman, aged 72. (Lewisham Hospital, February, 1935.) Admitted twice previously with bronchitis. Did well with apparatus and a series of asthmatic attacks was stopped.

CASE 13.—Man, aged 20. (Guy's, 1936, No. 3097.) Asthma coming on after pneumonia 13 years ago. Severe attack for two days. Very ill; pulse-rate 147. Adrenaline injections were ineffective. Machine brought relief and pulse fell to 120—a dramatic result. Later adrenaline brought success in some attacks, the machine in others.

CASE 14.—A young woman under the care of Dr. J. D. McLeod. Asthma for some years. Prolonged severe attack; no relief with the machine.

CASE 15.—Woman, aged 57. (Guy's, 1935, No. 5768.) Ten years' history of hay-fever. Has had asthma for the last 20 months. Some benefit from machine, but preferred adrenaline.

CASE 16.—Man, aged 31. (Guy's, 1935, No. 2358.) Asthma for 15 months. Machine was useful in dispelling the feeling of tightness in the early stages of the attack; but when the attack was established there was no curative effect. First sound louder at bottom of sternum than at apex. Pulse-rate, 88; respirations, 8. There was no alteration in the heart sounds, pulse, or respirations. Later, he did not find the machine of any benefit to him. Subsequently he obtained complete relief when the left antrum had been drained and polypi removed.

CASE 17.—Man, aged 27. (Guy's, 1935, No. 6117.) Asthma for eight months. Sensitive to dust, hair, and feathers. Machine tried five or six times, was of no value.

CASE 18.—Woman, aged 31. (Guy's, 1936, No. 112.) Asthma since 14½ years old; did well with ephedrine. Sensitive to kapok and wool. Tried machine at 2½ and 5½ in. pressure—no effect. Right ventricle was beating forcibly and radiography showed enlarged pulmonary infundibulum.

CASE 19.—Man, aged 40. (Guy's, 1936, No. 817.) Asthma since being gassed in the war in 1918. Hay-fever in August, 1935; his skin was markedly sensitive to plantain, less so to various other extracts. Machine helped him while using it; but dyspnœa came on again after its use. There was no severe attack of breathlessness at the time.

CASE 20.—Woman, aged 56, under the care of Dr. G. S. Lund. Asthma for seven months. Old tuberculosis in lungs. She obtained relief on one occasion from machine and attack was arrested; but later machine did not stop attack, though breathing was more comfortable while using it. Relief obtained from adrenaline spray with oxygen.

GENERAL HEART FAILURE.

CASE 21.—Man, aged 55. (Guy's, 1934, No. 9655.) Myocardial degeneration, emphysema, chronic bronchitis, diabetes. Winter bronchitis for 24 years. Ill for three months. Œdema of lungs and lower limbs. Orthopnœa; no nocturnal attacks. Treatment with machine for 20 minutes caused lowering of pulse-rate; but he felt no better. Later some improvement with oxygen tent.

PHTHISIS

CASE 22.—Woman, aged 49. (Lewisham Hospital, April, 1935.) Very ill. Sudden dyspnœic attack at 5.15 P.M. Definite relief during a quarter of an hour's treatment; died next morning.

CONCLUSIONS

1. Acute left-sided ventricular failure causes pulmonary congestion and œdema; paroxysmal dyspnœa (cardiac asthma) provides the usual symptomatology; acute left-sided failure may be a factor in some cases of bronchial asthma.

2. The "pulmonary plus pressure machine" has been devised for treating the condition.

3. By means of the machine some relief was obtained in seven cases of paroxysmal dyspnœa (cardiac asthma); in three of these cases (Nos. 1, 2, 4) later applications were not so successful. In one case recovery from an attack was dramatic. The machine was helpful in two cases of Cheyne-Stokes' breathing (Nos. 8, 9).

4. Out of 11 cases of asthma good results were obtained in three cases (Nos. 11, 12, 13); in one of them the result was dramatic. There was some relief in five cases; no relief in three (Nos. 14, 17, 18).

5. No benefit was obtained when there was generalised heart failure (Nos. 4 and 21). One patient shortly before death from phthisis obtained relief in a dyspnœic attack (No. 22).

I should like to thank Dr. Maurice Campbell and Dr. Humphrey Nockolds, medical superintendent of Lewisham Hospital, for allowing me to quote cases where this treatment was carried out. The incidental expenses of this investigation were defrayed by a grant from the Medical Research Council.

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# Clinical and Laboratory Notes

## NEW METHODS FOR DETECTING FLUID IN THE SEROUS CAVITIES

BY ROBERT L. PITFIELD, M.D.
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THERE seems to be hardly any need for a new sign to prove the presence of fluid in the pleural cavities. Aspiration is the most certain of all methods and radiography is very valuable, though it sometimes fails if the fluid is small in amount. It is therefore not always easy to find fluid in spite of the number of signs.

I have found a new sign that has proved very reliable in the hands of many medical friends and myself. Since I first described it[1] several new developments led me to give a further description; notable among these is the occasional absence of the sign when there is known to be fluid, and it seems important to explain how this may happen because it enhances its usefulness.

THE METHOD

It might well be called the diaphragm sign, since this organ of respiration plays the most important part in its mechanism. It consists first in collecting the fluid into as limited a space as possible on the

[1] Jour. Amer. Med. Assoc., 1932, xcix., 582.

diaphragm by having the patient sit up in bed. The patient should now lean forward a little. The back of the thorax over the suspected area is percussed with the finger tips of one hand, the other hand palpates the quadratus lumborum muscle on the same side. This will cause the collected fluid to vibrate, and the vibrations are felt by the palpating hand on the muscle.

Why these vibrations are transmitted to the muscle is explained by the well-known principle of hydraulics, that any pressure communicated to fluid in an elastic vessel or inelastic one will be distributed in every direction; the impulse of a blow will have a similar effect. When the chest is vigorously percussed over the fluid, vibrations in the latter will affect the diaphragm, which is inserted all around the chest and particularly to the ribs. It is attached by the arcuate ligaments to the twelfth ribs, into which the quadrati lumborum are inserted. Leaning forward increases the tension in the quadrati and sitting upright puts weight upon the diaphragm. When the diaphragm vibrates, the ribs—and therefore the quadrati—take part in the motion. I believe that these motions are magnified by a leverage effect, the rib serving as a fulcrum.

The vibrations may be completely abolished under certain conditions. If the patient will draw a long breath and hold it, none will appear in the muscle, even in the presence of fluid, because the inflated lung presses upon the taut diaphragm and damps all vibrations. If under the fluid there is consolidated lung or a neoplasm in its lower lobe, generally but not always these will quench vibrations in the same way as the distended lung. It is easily understood also how old adhesions attached to the lung and diaphragm will also cause the sign to be negative, though I have no post-mortem evidence yet to prove this conjecture. The absence of the sign when fluid is known by other methods to be present ought to lead the examiner to conclude that there may be diseased lung present under the fluid—pneumonia, for example, in acute conditions. This contributes more value to the sign. The only other way of determining this fact is either by draining the pleural cavity of all fluid and finding bronchial breathing and dullness in the suspected lung or by radiography.

As examples of cases with fluid in the pleura in which the sign is absent, I briefly quote two.

The first was a woman with an enormous amount of fluid in one pleural sac requiring four aspirations. I could not detect any quadratus vibrations when the chest was percussed; after draining the cavity and taking radiograms, an old unresolved pneumonia was found in the lowest lobe.

In the second woman several aspirations had removed fluid; radiograms and metastasis to glands in the neck showed that she had an endothelioma in the lung above which fluid had been removed. These two processes had damped the vibrations by pressing on the diaphragm.

#### FLUID IN THE ABDOMEN

The examination of a patient for ascites can be done much more easily and accurately by causing the patient to sit upright in bed, rather than to lie flat on his back. The fluid is thus gathered into one place, and presses upon the entire circumference of the abdominal wall; the intestines are floated up out of the way and cannot absorb the percussion impulses; and, lastly, no third hand is needed to compress the abdomen and the floating bowels as when the patient lies supine. The height of the fluid may be noted from time to time by this method by marking the lowest place where the percussion impulse is felt. By percussing one of the quadrati muscles and palpating the anterior abdominal wall small amounts of fluid can thus be detected. The succussion splash may be readily palpated. When the patient lies flat, however, the fluid, if small in amount, is separated by the spine into two sulci on either side of it.

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## ACUTE INVERSION OF THE UTERUS FOLLOWING VENTROFIXATION

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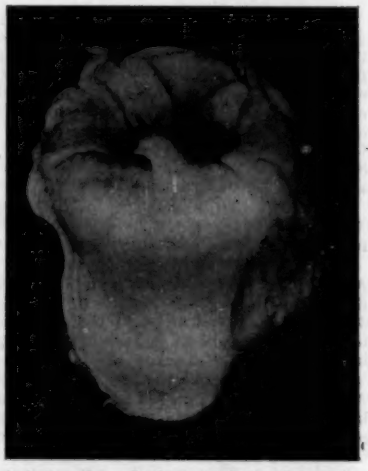
Mrs. A., aged 30, had had one previous normal confinement, at the General Lying-in Hospital, in 1927. A uterine operation, described as a low ventrofixation, had been performed elsewhere in 1933.

She attended for antenatal care on Jan. 31st, 1936, and a persistent tachycardia was the only abnormality noted until May 29th, five weeks before term, when she had a small hæmoptysis. On examination at this time she was short of breath and her pulse-rate was still fast, varying between 100 and 130. Her heart was not enlarged, and no diastolic murmur or thrill was detected; but a tentative diagnosis of rheumatic myocarditis was made, and this was supported by a "mitral facies" and a history of previous rheumatic pains. Her condition improved greatly with rest in bed.



Anterior view of uterus and bladder. The arrow marks the fibrous band of the ventrofixation.

Labour started spontaneously at term, and a live baby weighing 7½ lb. was born naturally six hours after the onset of pains. The placenta and membranes followed ten minutes later, together with a retroplacental clot of 32 oz. The cord was 21 in. long. The patient expelled the placenta spontaneously (as in her previous labour), and no fundal pressure whatever was employed. Her condition up to this time remained excellent. Ten minutes later, however, she suddenly became pale and rapidly developed all the features of profound shock, with a pulse which was barely perceptible; she was also cyanosed. A slight uterine hæmorrhage now began. The uterus was contracting badly, was difficult to control, and felt abnormal, an anterior ridge being palpable. The abnormality was wrongly attributed to the previous ventrofixation. At this point the diagnosis was extremely difficult, and seemed to rest between cardiac failure, obstetric shock aggravated by the hæmorrhage, and rupture of the uterus. In view of her desperate condition, all that could be done was to treat the shock, but in spite of all efforts she died two hours later.

Post-mortem examination showed partial inversion of the uterus, the inversion extending nearly as far as the cervix, and being prevented from completion by the fibrous band of the ventrofixation. The ovaries and

tubes were just disappearing into the cavity of the inversion (see Figure). The heart valves were normal, but the myocardium was soft and friable. The lungs were normal, and no other abnormality was found, apart from pallor of all organs. The cause of death was given by the pathologist as shock.

(1) This case emphasises the spontaneous origin of the inversion. Blair-Bell [1] states that acute inversion is usually spontaneous, being caused by "the peristaltic action of the uterine musculature." In this case all extraneous causes of inversion, such as fundal pressure or traction on the cord, have been eliminated; for the patient expelled the placenta entirely by herself. Furthermore, the symptoms of shock did not come on until ten minutes later. (2) It seems clear that the previous ventrofixation prevented the inversion from becoming complete, and thereby obscured the diagnosis. It is possible that it was a factor in starting the inversion, by interfering with uterine retraction. I can find no other record of inversion of a uterus on which hysteropexy had been performed. (3) The cardiac weakness further obscured the diagnosis, and may have hastened the patient's death.

I am indebted to Dr. J. P. Hedley for permission to publish this case; and to Dr. D. C. L. Derry who performed the post-mortem.

## TREATMENT OF BURNS AND SCALDS WITH A SILVER NITRATE OINTMENT

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APART from very grave and extensive burns and scalds which have to be admitted and treated in hospital, there are many that the practitioner has to treat in the patient's home. In such cases it is of the greatest importance to use a method of treatment that does not cause the patient much pain, and is at the same time aseptic and healing, simple and inexpensive. The gravity of burns and scalds depends upon the extent of the skin surface involved rather than on the depth of destruction of the tissues. On the other hand, the deeper the burn the slower will be the healing. The degree of a burn depends on the temperature of the flame, substance, or liquid causing the burn and the length of time it is in contact with the skin. Thus the presence of burning clothes, or clothes saturated with some scalding liquid, intensifies a burn because the time that these are in contact with the skin is generally longer than if the flame or scalding liquid came in contact with the bare skin.

Scalds are the commonest accidents in daily life, especially among housewives, servants, and children. These are usually of the so-called first or second degree, whereas burns by fire are usually of the third or necrotic degree. Extensive burns are very often accompanied by general symptoms, fever, prostration, and symptoms of loss of fluid.

In this note I shall refer only to the local treatment of burns and scalds. Many methods have been recommended: solutions of silver nitrate, bismuth as an ointment or powder, oil liniments, ambrine, and recently tannic acid as a spray. In my department a treatment based on the use of silver nitrate in an ointment has been used for about 25 years with the most gratifying results. This method is very simple and inexpensive, causes the patient very little pain, and promotes rapid healing of the burn. The composition of the ointment is as follows: silver nitrate, 0·25 g.; distilled water, 25·0 g.; olive oil, 25·0 g.; and wool fat (adeps lanæ), 50·0 g.

After cleansing the burn with sterile normal saline and removing the vesicles, a thick layer of this ointment, smeared on a piece of old soft linen, is applied. This is covered with an impermeable material such as Mosetig batiste or oil-silk and the whole dressing held in place by a gauze bandage. The ointment is renewed once a day, the burn being cleansed with normal saline at each dressing. Healing usually proceeds very rapidly, and the resulting scars are very satisfactory.

Long experience with this silver nitrate ointment has led me to regard it as the best practical treatment of burns and scalds not severe enough to necessitate admission to hospital.

[1] Blair-Bell, W.: Jour. Obst. and Gyn. Brit. Emp., 1930, xxxviii., 310; see also Giles, A. E.: Proc. Roy. Soc. Med., 1930, xxxiii., 1170; and Cook, J.: THE LANCET, 1935, ii., 884.

# MEDICAL SOCIETIES

## MEDICAL WOMEN'S FEDERATION

### PSYCHOLOGICAL GROUP

AT the Eleventh Annual Conference of this group held at Sheffield on Oct. 3rd, Dr. DORIS ODLUM being in the chair, a discussion on

**Delinquency**

was introduced by Dr. Helen Boyle, Dr. F. E. E. Schneider, and Dr. Elizabeth Bunbury.

Dr. BOYLE made an appeal for the psychological examination of all first offenders, and a psychological assessment of their delinquency or crime, in addition to that made by the law; such investigation to be obligatory in the case of child offenders, optional in the case of adults. She pointed out that the same crime as committed by different persons was not the same crime, nor the outcome of the same causes. Thus, delinquency might be an expression of incipient brain disease, of mental defect and retardation, of reaction to intolerable emotional situations, or of sheer lack of normal outlet in otherwise normal children. Under the present system a person might be convicted a great number of times before certain underlying psychological necessities for his conduct were laid bare—a recurrent expense to society which timely psychological investigation would have saved.

In the discussion which followed, Dr. HELEN WILSON, J.P., pointed out the increasing number of cases (such as those concerned with minor motoring offences) which hardly seemed to warrant so sweeping a recommendation as psychological examination of all first offenders.—Dr. MILDRED CREAK remarked that "ten minutes with a psychiatrist" was hardly adequate; nothing but a very thorough investigation could be of practical use.

Dr. SCHNEIDER analysed the factors making for delinquency; the causes, he said, no one knew. Endogenous factors included heredity, mental deficiency, mental disorder, and bodily ailments. Mental deficiency played an important part in delinquency. A striking group of case-histories pointed to a definite connexion between physical disorders such as

pulmonary tuberculosis and delinquency with general intractability. The post-encephalitic might get into the hands of the police without it being suspected that he had ever had an attack of encephalitis; experience at Rampton showed that the after-effects may not declare themselves for 12 years or more. Exogenous factors might be grouped under the varying environmental situations comprised by the home, the school, the street, and workshop. School could be regarded as the first line of defence against delinquency; there should, he thought, be a better classification of school-children. The greater frequency of delinquency amongst males than females had never been satisfactorily explained.

In the discussion Prof. A. E. NAISH pointed out the great difficulty of defining the borderline of mental deficiency, and of dealing with borderline cases whichever way one's decision tended.—Dr. SCHNEIDER, amplifying an earlier statement, said what was needed was a school (or even a class in a school) for children intermediate in standard between the ordinary and the special school, where their needs could be more adequately met than was at present at all possible.—Dr. M. BARTON HALL said she rarely met with delinquents having parents with criminal records, but factors such as alcoholism, marital infidelity, and the disrupted home were very frequent. She explained the difference in the numbers of female and male offenders by the fact that up to the present, at any rate, the home had been the focus of the girl, both as child and adolescent, claiming her interests and spare time, while the wider sphere of activity and greater adventurousness of the boy provided him with more opportunities of coming into conflict with the law.

Dr. BUNBURY said there were 400,000 known criminals in the United States, and this figure represented only about 8 per cent. of those engaged in crime. America had made a beginning where the beginning logically lay, namely, with the child delinquent. Comparatively little was done for the adult in a preventive way, though reclamatory methods were adopted in certain states. The American system, she said, tended to be more flexible than our procedure, was less tinged with officialism, and provided time and opportunity for thorough investigation. She described in brief the children's court and the reformatory school, together with the working of such remedial measures as foster-home treatment. On the whole she felt that in America, although investigation outstripped therapy, important advances were being made.

# REVIEWS AND NOTICES OF BOOKS

## Modern Treatment of Diseases of the Respiratory System

By A. LISLE PUNCH, M.B., M.R.C.P., Senior Physician to the Royal Northern Hospital; Physician to Brompton Hospital for Diseases of the Chest; and F. A. KNOTT, M.D., M.R.C.P., D.P.H., Director of the Bacteriological Department, Guy's Hospital. London: J. and A. Churchill Ltd. 1936. Pp. 295. 15*s*.

THIS sensible book is designed for the general practitioner and the senior student reaching the house-appointment stage. It is clearly and concisely written, and though quite up to date does not put too much emphasis on methods of treatment whose merits are not yet adequately established. Among the best chapters is that on the pneumonias, in which practical details are given on the administration of serum treatment and the arrangement of the oxygen tent. The postural treatment of pulmonary abscess, the technique of washing out the pleura in cases of empyema, and the indications for operation in both conditions are clearly described.

Several chapters are devoted to the treatment of pulmonary tuberculosis; useful information on the induction and management of artificial pneumothorax are given, as well as on its indications, whereas with the major operations of thoracic surgery the indications alone are considered in detail. It is rather surprising to find more than eight pages devoted to oleothorax, a procedure on which the writers do not appear to be enthusiastic, whereas the more common operation of simultaneous bilateral pneumothorax receives no more than a passing word of condemnation. We make no complaint of a somewhat dogmatic attitude in a book of this kind, since its readers require definite guidance rather than guarded statements; but such an attitude leads from time to time to opinions the expression of which could easily be attacked. The statement that the risk of pleural shock is considerably diminished by local anæsthesia is open to doubt, for instance, in view of the practice, almost universal in many countries, not to give a local anæsthetic for refills.

This book contains a number of hints for the house physician or practitioner, but omits some useful ones: for example, the procedure of tying in a needle, which is essential in the really bad valvular type of spontaneous pneumothorax is not mentioned, nor is the small but important detail, after the aspiration of purulent effusions, of making the patient lie on the unaffected side, so as to reduce the risk of needle track infections. As a whole, however, the book fulfills admirably its object of providing practical instruction on a difficult and rapidly changing subject. A special word of praise must be given to the choice and reproduction of the X ray films which illustrate it.

## Neurological Surgery

By LOYAL DAVIS, M.S., M.D., Ph.D., D.Sc., Professor of Surgery, Northwestern University Medical School, Chicago, Illinois. London: Henry Kimpton. 1936. Pp. 429. 28*s*.

THE advances in neurological surgery during the past thirty years have been recorded in innumerable monographs and journals, but we have not had in English a comprehensive review of the subject suitable for the medical student and the general practitioner. Prof. Davis has set out to supply this need, and his book gives a very fair impression of the opinions held by those who have made a special study of this branch of surgery, and will be helpful to those who have not been able to keep pace with its latest advances. The chapters on brain tumours and on the injuries of peripheral nerves are excellent. Prof. Davis has drawn upon his wide personal experience to the great benefit of his readers, and these chapters are so well illustrated by drawings and microphotographs that of themselves they should entitle the book to a place in the practitioner's library. The chapter on intracranial abscess, though it brings out clearly the modern view that it is wiser not to regard this condition as a surgical emergency, fails to give the reader a clear idea how to choose the right time for operation; and a similar vagueness about the general management of cases of injury to the brain and spinal

cord detracts considerably from the practical value of these sections of the book. It should be possible to state in fairly simple terms what the practitioner must look for in cases of suspected injury to the brain or spinal cord, and then to lay down definite rules for the appropriate treatment of certain syndromes, and it is such dogmatic teaching that students and practitioners require.

In the chapter on tumours of the spinal cord most of the important features are mentioned, but it remains for the reader to work out the exact method of establishing the fact that a given paraplegia is due to a progressive compression of the cord, and we feel that this should have been done for him by the author. Only 20 pages have been allotted to the surgery of the autonomic system, which might just as well have been omitted altogether. In its present form this book may be regarded as a sound basis upon which to build up a knowledge of neurological surgery, but a careful revision with expansion of certain sections would certainly increase the practical value of a future edition.

## Applied Physiology

Sixth edition. By SAMSON WRIGHT, M.D., F.R.C.P., John Astor Professor of Physiology, University of London, Middlesex Hospital Medical School. London: Humphrey Milford, Oxford University Press. 1936. Pp. 686. 20*s*.

THE fifth edition of this book appeared only two years ago, and the sixth calls for little additional comment. Once again the author has revised many sections and supplemented the remainder to bring the whole up to date, but this time he has put in more than he has taken out, and the book has grown by 80 pages. This is largely due to the introduction of 90 new illustrations, some of which, like the charts showing the relations of the sterol derivatives, are very valuable for reference purposes. Prof. Wright is tempted to apologise for the increased size, but he may rest assured that the book is improved. It is marred only by exigencies of the examination system, which engenders compression, tabulation, italics, and a rounding of the pegs of knowledge to fit the holes in the student mind. The book remains a feat of authorship, abruptly forsaking each subject for the next lest there be not space for everything. One feels that it might have been a classic, and it has seen six editions in ten years, has been thrice reprinted, and its positive virtues outweigh its negative shortcomings. It is crammed with information of interest and value to the student entering upon his clinical studies, throwing a new light on these and on physiology. We stated recently that Prof. H. E. Roaf in his textbook managed the transition from preliminary sciences to physiology unusually well; Prof. Wright's book is unique in bridging the gap between physiology and medicine. Both types of book are necessary. In his preface Prof. Wright says: "the teacher (of physiology) should bear in mind that he is giving instruction to men who, in the main, will become doctors. . . ." He should also remember that the student comes from his premedical courses knowing virtually nothing about the body; in the short period of 18 months or so he has to learn a completely new language so thoroughly that in his subsequent work he thinks in terms of nothing else. In view of the somewhat missionary flavour of Prof. Wright's preface to the teaching of physiology in general, we must confess that we still feel that his is not the book for the junior student, invaluable though it may be later. Medical education owes a great debt to Prof. Wright, but to abandon method for matter is to sell its birthright, and to thrust the student too precipitately into the study of applied physiology is to substitute the acquisition of knowledge for education. The book removes the student's complaint that he is suddenly pitchforked into the bewildering maze of clinical work; let it not introduce the grievance that he is suddenly pitchforked from the sedateness of pure science into the turbulence of physiology.

## Biology and the New Physics

By C. J. BOND, C.M.G., F.R.C.S., F.L.S., Hon. Consulting Surgeon to the Leicester Royal Infirmary. London: H. K. Lewis and Co., Ltd. 1936. Pp. 67. 2*s*. 6*d*.

Mr. Bond of Leicester, like many other people, would prefer a consistent interpretation of the whole of human experience. He is dissatisfied and disturbed at the mixture of deterministic and indeterministic explanations which is offered at present, and in his presidential address at the centenary meeting of the Leicester Literary and Philosophical Society he proposes a plan of reconciliation. He suggests that the actions of the most elementary particles were (and are) free and at random; as complexity increased, and in consequence, heterogeneity replaced homogeneity, restrictions of environmental origin began to come in and the common-sense relation of cause and effect prevailed; finally, in association with life and mind, random action came to be controlled by the organism rather than by the environment and we reached volition and purposive behaviour. His argument, like most such arguments, is not altogether convincing, but it is interesting in itself as well as in being the considered opinion of a great doctor who has fruitfully explored many fields of thought and experiment.

## A Treatise on Materia Medica and Therapeutics

*Including Pharmacy, Dispensing, Pharmacology, and Administration of Drugs.* By the late RAKHALDAS GHOSH. Fourteenth edition. By BIRENDRA NATH GHOSH, F.R.F.P. & S. Glasg., Professor of Pharmacology, Carmichael Medical College, Calcutta. London: H. K. Lewis and Co., Ltd. 1936. Pp. 724. 12*s*. 6*d*.

IN his introduction to this work Prof. Ghosh deplores the modern neglect of materia medica proper, and this subject as well as pharmacy and dispensing is fully discussed. On the other hand the more purely chemical aspects are relatively neglected, and a book so complete in other respects would be improved by the inclusion of structural formulæ for many alkaloids and for synthetic drugs. As one would anticipate in a text-book intended primarily for use in India, chemotherapy and parasiticides are particularly well treated. Chapters are devoted to vaccine and serum therapy, and radiation therapy. An interesting section deals with drugs indigenous to India, most of which are unknown in this country. The book has been brought thoroughly up to date. Numerous drugs recently introduced into medicine, such as evipan and other new barbiturates, ergometrine and coramine receive due notice. The modern physiological division of the autonomic nervous system into cholinergic and adrenergic fibres is also mentioned. Unfortunately this conception

is not constantly applied throughout the book and eserine is stated in several places to act by stimulating parasympathetic nerve-endings, whereas it is now generally believed to act by preventing the enzymic destruction of acetylcholine liberated at cholinergic nerve-endings.

A considerable portion of the work is in small print and a large amount of information has been packed into its pages. There are certain loose statements—e.g., few would consider psoriasis to be a syphilitic disease (p. 483)—and too many misprints, but the general outlook both in pharmacology and therapeutics is thoroughly in accord with modern teaching in this country.

## Annual Review of Biochemistry

Vol. V. Edited by JAMES MURRAY LUCK, Stanford University, California. Annual Review of Biochemistry Ltd. 1936. Pp. 640. $5.

THIS annual publication has come to be regarded as the most important biochemical review. The careful selection of subjects on which the most recent advances are being made enables one to follow what progress has been accomplished from year to year. The subjects in general are similar to those dealt with in last year's review, although a different selection of contributing authors has been made. The chapters on oxidations and reductions by D. E. Green and D. Keilin and on enzymes by J. H. Quastel contain a competent summary of recent work on these rapidly progressive subjects. A new section on X ray studies of the structure of compounds of biochemical interest, by O. L. Sponsler and W. H. Dore, briefly describes the importance and recent results of the application of this method for determining steric configuration of crystalline substances. The chapter on hormones is by E. A. Doisy and D. W. MacCorquodale and covers this large and difficult field in an efficient manner. The references appear to have been carefully selected and include most of the important articles published during the previous year. The extensive research on the vitamins has led the editor to divide the subject into water-soluble and fat-soluble vitamins. These are reviewed by H. von Euler and by E. V. McCollum respectively. The clinical application of biochemistry is adequately described by J. P Peters, C. L. Robbins, and P. H. Lavietes.

This brief synopsis of important biochemical research has become a necessary addition to the libraries of all biological workers as a reference guide.

## Medical Mycology

*Fungous Diseases of Men and Other Mammals.* By CARROLL WILLIAM DODGE, Ph.D., Mycologist, Missouri Botanical Garden; Professor, Henry Shaw School of Botany, Washington University, St. Louis. London: Henry Kimpton. 1936. Pp. 900. 42*s*.

MEDICAL mycology is a subject which has suffered a good deal from lack of coördination among its exponents. Its literature includes a great deal of unsound matter, since persons having no special knowledge of fungi have not hesitated to name "new" species and to describe them in terms often inadequate, while the evidence of pathogenicity is often unsatisfactory. To compile a sound text-book from such material demands a special knowledge of both systematic mycology and animal pathology, a combination rarely found in one person. Unfortunately in this book the subject is dealt with almost exclusively from the viewpoint of the systematic mycologist and, for this reason, the sub-title is rather misleading.

Prof. Dodge has clearly made an exhaustive survey of the literature of medical mycology and from this material he has elaborated a classification which, although open to certain objections, is a welcome attempt to reconcile many of the existing, and sometimes conflicting, systems. The classification of fungi of medical interest presents special difficulty, for almost all of the pathogenic species are imperfect and many of the parasitic forms exhibit further morphological degradation. In classifying the yeast-like fungi Dr. Dodge has depended largely on the published reports of physiological characters, in default of morphological descriptions, and this has led him to adopt the novel method of grouping the species into those which possess a certain property, those which do not possess this property, and those about which the literature is deficient on this point. In other instances the differentiation of species depends upon the part of the body from which the fungus was originally cultivated.

A drastic weeding out of unauthentic and redundant species followed by a considerable amplification of familial, generic, and specific descriptions, with citation of authority in all cases, would have greatly improved this work. Even in its present form it may be recommended to advanced students of mycology and research workers to whom the full and up-to-date bibliography should prove especially valuable.

# REPORTS AND ANALYSES

## ERGO BISCUITS—STARCH REDUCED

(POLLEY AND CO., LTD., 44/54, PLYMOUTH-ROAD, LONDON, E.16)

THE box examined contained 19 biscuits, each piece weighing 0·45 oz. The flavouring used was cheese. When analysed the following results were obtained:—

| | |
|---|---|
| Water | 7·26 per cent. |
| Fat | 14·60 ,, ,, |
| Ash | 1·84 ,, ,, |
| Protein | 37·40 ,, ,, |
| Crude fibre | 0·10 ,, ,, |
| Altered starch (carbohydrates) | 38·80 ,, ,, |
| Calorie value per lb. | 2030 |

Compared with ordinary bread calculated to the same moisture content—i.e., from 40 to 7 per cent.—these biscuits contain half the amount of altered starch (carbohydrates), ten times the amount of fat, three and a half times the protein, and a 20 per cent. higher calorie value. The necessarily somewhat uninteresting and dry flavour of such a product is ingeniously ameliorated by the addition of cheese or celery. There are also sweet or dry varieties. These biscuits should prove of value in the many conditions in which the intake of carbohydrate food has to be restricted.

SALFORD ROYAL HOSPITAL.—Lord Stanley, on Oct. 10th, laid the foundation-stone of the extensions to this hospital. A three-storeyed block is being built for orthopædic purposes, a two-storeyed one for the treatment of fractures, and an accident and casualty department where patients can be treated in privacy. The cost of the extensions has been subscribed, but money is needed for furnishing and equipment. Lord Stanley also declared open a new ear department.

THE LANCET

*LONDON: SATURDAY, OCTOBER 24, 1936*

## FEVER THERAPY

IT is accepted, we believe, on both sides of the Atlantic, that the average Briton is more conservative than the average American, or, alternatively, that the average American is more progressive than the average Briton. Each of us believes more or less secretly in the superiority of our own point of view, but fortunately neither of us has the least desire to make converts. By turns we ignore, profit by, or make fun of our differences, but only rarely do we become truly supercilious. This is fortunate in the field of medicine, where the price of prejudice is human life, and in which a tradition is preserved which transcends national differences. Experiments whose only merit is the enthusiasm with which they are prosecuted probably have a somewhat longer "run" in the United States than they would be allowed in this country, but it might justly be retorted that we are a little reluctant to make large experiments on our own account. The balance is quickly restored, as a rule, by reference to an unfailing criterion: the good of the patient.

In one branch of therapeutics, that of artificial pyrexia, the balance has remained heavily weighted on the American side for an unusually long time, and it shows little sign of returning to a neutral position either by an abandonment of the treatment in America or its adoption here. The period of indiscriminate trial seems already to be finishing, and a perusal of recent American writings reveals that the treatment is now established, the conditions in which it is most useful fairly well known, and its technique becoming adapted to the type of case treated. A review, impartial and moderate in tone, by GLADYS TERRY, of the Neurological Institute, New York,[1] assesses the results in several diseases, and then indicates the methods available for artificially raising temperature, the precautions and contra-indications to be observed, and the possible accidents. These need not be described now, but the general principles, which we have discussed on previous occasions,[2] suggest that here is a form of therapy which is much safer to test than, for instance, a new drug. Few hospitals are without equipment which could be adapted for raising temperature (although the more primitive the apparatus the greater is the need for strict supervision and continuous observation of the patient), and all trained nurses are familiar with the means of reducing temperature. Provided the patient has been suitably prepared and is not suffering from anything predisposing to sudden collapse, such as cardiovascular or renal degeneration, untoward effects can be avoided by prompt emergency measures to reduce temperature as soon as unusual symptoms appear. The superiority of physical methods is illustrated in a paper on the treatment of tabes dorsalis by A. E. BENNETT,[3] which contains a brief but interesting historical introduction. NEYMANN and KOENIG are quoted as having had a mortality of 18 per cent. from malarial treatment, 10 per cent. from rat-bite fever, but none from diathermy. BENNETT himself, while making no extravagant claims, believes that this method of treating tabes is the best yet devised, and emphasises its value in relieving lightning pains and gastric crises, thereby making it unnecessary even to consider such drastic measures as chordotomy. The claims put forward for hyperpyrexia in the treatment of neurosyphilis and gonorrhœa are, however, well known, and our object here is not so much to urge these claims as to suggest that if simple precautions are taken there is no reason why they should not be widely investigated.

NEYMANN, BLATT, and OSBORNE[4] report striking results from the treatment of 25 cases of chorea. In all, the choreic movements ceased promptly; the average time in hospital was 16 days and the average number of treatments was four per patient. Several of these cases were severe, some were of long standing, and only three had any relapse. With the reservation that two of the patients had been discharged from hospital only one and two months when the paper was written, the record is extraordinary. The paper is also interesting in that it describes the most up-to-date method of raising temperature (electromagnetic induction by high-frequency current) and a special air-conditioned chamber that encloses most of the patient and adds materially to his comfort. The method is peculiarly adapted to chorea because of the movements of the patient, the flex conveying the current being simply laid over the bedclothes or under the mattress. Other conditions in which relief has been claimed are the various lesions classed under arthritis and fibrositis, asthma, disseminated sclerosis, post-encephalitic states and schizophrenia. These claims are not so impressive, but there is a case for the use of moderate fever, if not hyperpyrexia, in the relief of asthma. Although agreement is lacking about the permanency of the effect, nearly all cases are benefited for a time.[5] In this disorder particularly the influence of the treatment will be partly psychological, but none can doubt that fever is also physiologically powerful. Yet though much has been written on the "physiology" of hyperpyrexia and the possible effect of changes in the composition of the blood, sweat, and urine, the reason for its beneficial action remains a mystery. Perhaps its action in syphilis

[1] Terry, G. C.: Bull. Neurol. Inst., N.Y., 1936, iv., 707.
[2] THE LANCET, 1934, i., 1075 and 1129; 1934, ii., 806 and 1236.
[3] Bennett, A. E.: Jour. Amer. Med. Assoc., Sept. 12th, 1936, p. 845.
[4] Neymann, C. A., Blatt, M. L., and Osborne, S. L.: Ibid., Sept. 19th, 1936, p. 938; see also Metz, M. H.: Ibid., May 9th, 1936, p. 1658.
[5] Jour. Amer. Med. Assoc., August 1st, 1936, p. 384 (abstract); see also Terry and Metz (above references), and THE LANCET, 1935, ii., 201.

should be excepted, for the *Spironema pallidum* is known to succumb to a lower temperature than does the human body. Otherwise, the most likely factor is probably the increased rate of metabolism of the tissues, which may convert a passive into an active resistance. It is noteworthy that most of the conditions benefited are those which become chronic.

## INHIBITION OF ANTERIOR PITUITARY FUNCTIONS

Two articles in our present issue describe attempts to influence non-reproductive functions in human beings by administration of female sex hormone. Both pieces of work are based on —and serve to test—the hypothesis that a single hormone can so affect the anterior pituitary that more than one of its numerous functions is inhibited. Since MOORE and PRICE in 1930 suggested that œstrin suppresses the gonadotropic function of the anterior pituitary, experiments on animals have amply confirmed the supposition as regards the action of large amounts of œstrin. On the other hand, small amounts of œstrin appear to stimulate the anterior pituitary. This assumption of paradoxical action has reconciled apparently contradictory results recorded in this field of investigation, but there is as yet no clue to the physiological mechanisms involved. The inhibition of the gonadotropic function by large doses of œstrin has been demonstrated clinically by several workers, and examples may be drawn from Prof. BERNHARD ZONDEK'S paper in our issue of Oct. 10th and from the paper by Dr. JONES and Mr. MACGREGOR in the present issue. ZONDEK observed that menstruation was suppressed by injections of 100,000 to 200,000 mouse units of œstrin between the sixth and twenty-fourth days of the cycle; JONES and MACGREGOR note that 500,000 M.U. given during 20 days caused the disappearance of gonadotropic hormone from the urine of elderly women.

The conception of gonadal–gonadotropic antagonism has been considerably extended, particularly by ZONDEK and by CRAMER and HORNING,[1] to account for the effects of excessive œstrin on other endocrine functions controlled by the anterior pituitary. According to CRAMER and HORNING the ultimate functional effect of the prolonged application of œstrin is a condition closely resembling that following hypophysectomy. On the assumption that the chromophil cells are responsible for secreting the specific hormones of the anterior lobe, the general condition of hypopituitarism and the extensive changes in the endocrine organs produced by œstrin are explained by the disappearance of these chromophil cells. (ZONDEK attributes it rather to "blocking" of their secretion.) The possible clinical application is this: can we not use œstrin to inhibit anterior pituitary function—to bring about the equivalent of a partial hypophysectomy—and so relieve some endocrine organ from the excessive stimulation from which it is suffering? The initial difficulty is that suppression of the chromophil cells by œstrin does not inhibit the production of all the pituitary hormones equally. ZONDEK has demonstrated particularly clearly the succession of effects, first on the gonadotropic function, later on the growth hormone. The order in which other functions are affected remains to be determined. The paper by JONES and MACGREGOR leads to the conclusion that the gonadotropic function of the anterior pituitary can be considerably disturbed without affecting the control of carbohydrate metabolism to such an extent that any change in glucose tolerance is perceptible.

Finally we come to Dr. SPENCE'S bold attempt to attack the cause of toxic goitre. This rests on two assumptions—namely, that toxic goitre is due to over-stimulation of the thyroid by excess of pituitary thyrotropic hormone, and that production of thyrotropic hormone by the human pituitary can be appreciably depressed by the daily administration of 50,000 international units of œstradiol benzoate over a period of two or three weeks. The experimental studies on inter-relations of the thyroid and gonads and anterior pituitary, which are well reviewed by SPENCE, fully justify his investigation, but his result is a clear negative to the possibility of improving the clinical condition by giving œstrin in the amounts employed. It is still possible that the various links in the chain of hypotheses which led to this work are sound, and that thyrotoxicosis could be alleviated by œstrin, although perhaps in such massive doses that the pituitary functions would be reduced to chaos. Against this possibility we have the preliminary statement of ZONDEK that prolonged administration of œstrin does not inhibit thyrotropic function at all, but may indeed stimulate it.

[1] THE LANCET, 1936, i., 1056.

## AN EVALUATION OF ARTIFICIAL PNEUMOTHORAX

CLINICIANS in general show a profound mistrust for statistics compiled by their colleagues. In the latest volume published by the Medical Research Council[1] Dr. BENTLEY has taken care not to commit any of the seven deadly sins of medical statisticians—as he aptly describes such errors as paucity of material, selection of cases, precipitancy, false control, equivocation in definition, failure to trace a sufficient number of patients, and lack of clinical detail. His report covers 677 cases treated at L.C.C. hospitals by artificial pneumothorax and followed up for a period of at least three years; 411 of them have been observed for five years or more. The results classified according to age, sex, extent of disease, degree of collapse, condition of better lung, persistence of T.B. in the sputum, and home conditions are compared with a conservative group of 3329 cases. These are not looked on as a control group in any strict sense but are regarded as more satisfactory than the method of some writers of contrasting the good effects of pneumothorax with the much

[1] Artificial Pneumothorax: Experience of the London County Council. By F. J. Bentley, M.D., M.R.C.P., D.P.H. H.M. Stationery Office. 1s. 6d.

less favourable results in cases in which the treatment failed on account of adhesions or had to be given up during the first three months. Dr. Bentley finds that artificial pneumothorax is being applied to about 10 per cent. of all patients now undergoing institutional treatment for pulmonary tuberculosis; he does not think that this figure is likely to be greatly exceeded in future as this method of treatment can only be expected to give good results in carefully selected cases. The survival in the 677 cases investigated was some 20 per cent. higher in the pneumothorax group than the expected number amongst those conservatively treated. Pneumothorax would thus appear to have reduced the total tuberculosis mortality in this series by about 2 per cent. The importance of the degree of collapse obtained is shown by the fact that incomplete collapse cases, which formed 60 per cent. of the whole, showed a mortality of 50 per cent. in the first three years compared with 34 per cent. in the complete collapse cases; with strictly unilateral cases the corresponding figure was 23 per cent. The best results of all were shown by collapse cases (group T.B. plus) which were sputum negative on discharge—of these 90 per cent. were living after three years. The influence of home conditions is of course considerable, but a good collapse in a bad home is shown to be preferable to an incomplete collapse in a good home (56 per cent. alive as compared with 48 per cent.).

The difficulty of getting a proper control group in dealing with any special method of treatment is almost insurmountable, and the method employed in this publication of comparing the A.P. cases with those conservatively treated, although superior to the false controls previously mentioned, is still far from satisfactory. Selection of cases is, and will long remain, far from standardised; one physician will only advise pneumothorax in strictly unilateral cases after conservative treatment has failed to control the symptoms, but at the same time an equally eminent colleague will consider it the best treatment not only for cases with minimal lesions but also for those advanced cases which have one lung considerably more affected than the other. For statistical purposes of this kind the Ministry of Health classification leaves much to be desired; the separation of the T.B. negative from the T.B. positive cases is rightly insisted on, but the division of the positive cases into three groups chiefly on a basis of physical signs and symptoms must be considered out of date when clinicians are agreed that it is only by radiological examination that an accurate idea of the extent of the disease can be obtained, and that the presence or absence of cavities in sputum positive cases is the chief indication for collapse therapy; for it has been found that a persistent cavity, with or without physical signs or symptoms, is associated with a bad prognosis. The present classification makes no mention of cavities, and the intermediate group B 2 is larger than the other three groups added together and obviously contains cases of widely different prognosis.

As a result of this investigation Dr. Bentley concludes that whilst pneumothorax treatment may in the future be carried out in earlier cases generally, and in young male adults in particular, it is not likely that the total proportion of cases so treated will increase greatly above its present figure of 10 per cent., as indifferent results are being obtained in cases with contralateral disease who now form more than half the total and also in those with incomplete collapse who constitute about half the remainder. The unsatisfactory results in cases with incomplete collapse point to the desirability of increasing the application of surgical methods of collapse to such unilateral cases rather than persisting with an unselective pneumothorax. Although the report may not add much to our knowledge of the comparative values of pneumothorax and conservative treatment, Dr. Bentley's compilation has the merit of providing a large number of carefully analysed and pertinent facts.

## THE ROCKEFELLER FOUNDATION

IN allocating funds available for distribution the present policy of the Rockefeller Foundation is to apply the greater part to the furtherance of knowledge in selected fields. Although the report for 1935 mentions a host of assisted projects—research in medicine, science, and international relations; the training of nurses, scientists, and administrators; the teaching of basic English; the building of libraries, and so on—it is especially concerned with a few subjects, of which the chief are yellow fever, the application of physical and chemical technique to biological problems, and psychiatry. Surveys of the geographical distribution of yellow fever in Africa and South America have shed new light on the disease. In Africa immunity to it has been found widespread in an area from the coast of Senegal to the White Nile between the latitudes of 16° north and 6° south. This area in its western part includes the great endemic area of the disease, but in the eastern part the illness except for a single case has not been recognised. Last year the Foundation gave in its annual report the first description of "jungle yellow fever," a type occurring in a region close to the other great endemic area, in Brazil. During 1935 this type has been found to be clinically and pathologically the same as endemic yellow fever, but to occur widely and to be independent of the mosquito *Aëdes ægypti*.[1] Whether the disease now presumed to exist in areas of Africa previously considered free will be found to be comparable to jungle yellow fever remains to be seen.

Physical and chemical technique have been used to elucidate among other problems the structure of chromosomes, the fate of fats and fatty acids in the body (observed by ear-marking them with an atom of heavy hydrogen), and the effect of treatments for lead poisoning, measured by spectroscopic determinations of lead in body fluids. Psychiatry comes under a heading of "program of special concentration," and in 1935 about 1½ million dollars was devoted to the subject, for the development of teaching centres, for research, and for the application of psychiatry. The generous grants recently made or offered to the Maudsley Hospital, the National Hospital, and the Galton laboratory are examples in this country of how this programme is being carried out.

[1] See THE LANCET, 1936, i., 510.

# ANNOTATIONS

## MIDWIVES AND ANALGESICS

THE Central Midwives Board has now taken action on the report submitted [1] last January by the British College of Obstetricians and Gynæcologists. At the request of the National Birthday Trust Fund the College carried out an investigation to ascertain if there is any form of analgesia which can be used with safety and success by a midwife in the absence of a medical practitioner. The College came to the conclusion that the administration of gas and air by the Minnitt or similar apparatus is a safe and satisfactory method, although the apparatus is expensive and the nitrous oxide costly, and they recommended that its use should be extended to the practice of midwives, provided they are specially trained in its administration. The advisory memorandum now issued by the C.M.B. has been drawn up after consultation with the College. According to Rule E.10 (a) of the C.M.B. a midwife must not, except under a grave emergency, undertake any treatment which is outside her province, and under Rule E.10 (b) she may not on her own responsibility use any drug unless she has been thoroughly instructed in its use and is familiar with its administration. The C.M.B. now states explicitly that it regards the administration by a midwife, acting as such, of gas and air by Minnitt's or similar apparatus, for the purpose of producing analgesia during labour, as treatment within her province. Three conditions are attached to this permission :—

1. The midwife must have received at an institution approved by the C.M.B. for the purpose special instruction in the essentials of obstetric analgesia and must have satisfied the institution that she is thoroughly proficient in the use of the apparatus.

2. She must have a certificate in writing from a registered medical practitioner who has examined the patient within a month of her confinement that the patient is in a fit condition for gas-and-air administration.

3. There must be in the room at the time of administration, in addition to the midwife, one other person being herself a midwife, a State-registered nurse, a senior medical student, or a pupil midwife.

It is understood that the institutions approved for instruction in the use of the apparatus will be those which have coöperated with the College in its investigations, or such of them as are prepared to provide courses. Other institutions will be approved as occasion demands. The C.M.B. does not propose itself to issue regulations for the course of such training but will leave to the approved institutions the responsibility for deciding on its adequacy and on the proficiency of any particular midwife.

The difficulty about expensive apparatus is steadily being lessened by the production of relatively cheap and portable machines and arrangements for distributing gas cylinders to private addresses. The National Birthday Trust Fund is able to state that a portable midwives' model will shortly be available at a price of eight to twelve guineas and that 50-gallon gas cylinders can be supplied, collected and delivered at a flat-rate charge of 3*s*. 6*d*. per cylinder. At the Wellhouse Hospital, Barnet, where midwives have for long been trained to use gas and air for their own patients, the cost of nitrous oxide was working out at a little over two shillings per case.

Along with this concession to the midwife to use gas-and-air analgesia is a decision to give effect to the opinion expressed in the report of the College that chloroform should not be used by midwives acting alone. In the advisory memorandum, after setting out the conditions under which gas-and-air analgesia may be used by the midwife, the C.M.B. states expressly that administration by a midwife of any other anæsthetic, otherwise than under the personal direction and supervision of a registered medical practitioner, is regarded as treatment outside her province.

[1] See THE LANCET, 1936, i., 282, 319.

## THE PRESERVATION OF SERUM

MOST therapeutic sera are still preserved from bacterial contamination by the addition of tricresol, a disinfectant which though fully reliable has the disadvantage of being distinctly poisonous. Its effects are negligible when only small doses of serum are given, but one cannot escape the belief that when large volumes are given, especially by intravenous injection, the action of the tricresol in the serum must be placed on the debit side of what is usually in any case a rather complicated account. Where a serum has been shown actually to diminish the likelihood of recovery its ill effect has usually been attributed wholly to the large amount of foreign protein introduced; but so far as we know there is nothing against the view that the preservative is partly responsible.

There are many disinfectants which in a general way are much more efficient and less toxic, either relatively or absolutely, than tricresol, but it appears also to be universally true that the more powerful a disinfectant, the more varied is its action on different bacteria, so that although extremely dilute solutions suffice for some, others will resist concentrations many times greater. Unfortunately the preservation of serum, unlike some other purposes for which a disinfectant may be used, demands that the reagent used shall be capable of destroying any micro-organism whatever, and otherwise admirable disinfectants, active in dilutions so great as to constitute an ideal preservative, have been found to fail with some diphtheroid or mould which happens to possess what can only be looked upon as a freak degree of resistance to it. One way of overcoming such a drawback is to combine two disinfectants of different constitution, each of which, besides reinforcing the general action of the other, might be capable of filling occasional gaps in the capacity of the other, since peculiar insusceptibility to disinfectant action is often confined to a single class of disinfectant. A step has been taken in this direction by the work of C. R. Falk and S. P. Aplington (Amer. Jour. Hyg., 1936, xxiv., 285), who have studied the effect of mixtures in different proportions of phenol and merthiolate on three different bacteria at three different temperatures and over a considerable number of time periods. Their general conclusion appears to be that this combination is a good one. Merthiolate is an example of a disinfectant active against most bacteria in extremely high dilution, and having certain chinks in its armour which alone prevent it from being ideal. Unfortunately phenol, on the other hand, is even more poisonous, in proportion to its disinfectant power, than tricresol; but if the reduced proportion of phenol employed by Falk and Aplington could be altogether eliminated in favour of some less toxic substance equally capable of supplementing the action of merthiolate where necessary, these experiments might point the way to an important advance.

## ANÆMIA AND MYXŒDEMA

THE influence of thyroxine on erythropoiesis has hitherto been ill defined. In 1926 G. M. J. Mackenzie [1] drew attention to a group of cases with megalocytic hyperchromic anæmia which responded well to treatment with thyroid, though the original diagnosis had been that of pernicious anæmia. Since that date several authors have reported patients with myxœdema and megalocytic hyperchromic anæmia who have responded to treatment with both liver and thyroid but to neither remedy when given alone. The occurrence of a hypochromic type of anæmia in association with myxœdema has also been noted, but the available evidence has not made clear whether such an anæmia would respond to liver alone, thyroid alone, or to combined therapy. S. A. Holbøll has now studied 28 cases of myxœdema over a five-year period.[2] In 13 of these patients the hæmoglobin was below 70 per cent. One patient had typical pernicious anæmia, four had a colour-index above one, the others had a normal or subnormal index. Treatment with liver and stomach preparations was without effect; iron alone produced no appreciable change in the blood picture. Thyroidin in all cases exercised a favourable influence on the anæmia. In some instances, however, when the hæmoglobin reached a level of about 80 per cent. no further improvement occurred until iron was given, when a second rise in hæmoglobin took place. If iron and thyroidin were given together the most satisfactory results were obtained. In four cases after a normal blood picture had been reached Holbøll withdrew thyroid; in all there was some return of the anæmia. These observations suggest that the hypochromic anæmia found in certain patients with myxœdema is dependent in part upon the absence of thyroxine and is not due to an associated but independent iron deficiency. We do not yet know how thyroxine exerts its influence upon hæmopoiesis.

## BOOMERANG LEG AND YAWS

THE council of the Royal Society of Tropical Medicine and Hygiene has wisely decided to publish from time to time monographs of outstanding interest to students of tropical medicine. It is happy in its choice of Dr. Hackett to inaugurate this new venture, and he is to be congratulated upon an excellent production,[3] the material for which was obtained in the Northern Territory of Australia during the winter of 1934, with assistance from the Sheridan research bequest of the University of Adelaide. The Southern area of the Northern Territory is described as acacia-covered semi-desert and shrub steppe, rising in places to 1000 feet above sea-level. The climate is hot and dry, and temperatures of over 100° F. are frequent in summer, whilst night temperatures below 32° F. are recorded in winter. The annual rainfall is under twelve inches. Hackett's investigations lead him to believe that syphilis does not occur amongst the natives of Central and Northern Australia, though gonorrhœa is common. At the present time the presence of yaws is well recognised, and some of its manifestations, such as gangosa, have been noted. It may be, too, that the disease known as *irkintja* amongst the aborigines is in reality yaws. Boomerang leg is an antero-posterior curvature of the leg below the knee with a forward convexity; occasionally the curve is interrupted by bosses of localised periosteal thickening, and they are often associated with cicatrices. The severity of bone pains experienced with these lesions sometimes renders walking impossible. Hackett finds that 84 per cent. of cases give positive Wassermann reactions, whereas a control series of natives without scars or boomerang legs gave negative results. This evidence, together with the fact that sabre tibiæ are seen in other parts of the world where yaws is in evidence, supports the conclusion that boomerang legs in Australia are identical with the osteitis of yaws as seen elsewhere. Particularly valuable are the radiographic studies in association with examination of the bones themselves, and the monograph is illustrated by many good radiograms as well as other photographs. The appearances depend upon the severity of the initial lesion and the time which has elapsed since the onset. Areas of rarefaction appear early and the bone becomes deformed. As the more acute stage resolves the rarefied areas clear up, leaving a depressed bone and a thickened cortex. Lines of arrested growth are often seen. Rare lesions found in bones are multiple necrotic foci, periosteal nodes, and generalised periosteal deposits.

[1] Jour. Amer. Med. Assoc., 1926, lxxxvi., 832.
[2] Acta Med. Scand., 1936, lxxxix., 526.
[3] Boomerang Leg and Yaws in Australian Aborigines. By Cecil J. Hackett, M.D., M.R.C.P. Monograph 1. Roy. Soc. Trop. Med. and Hyg. (Manson House, 26, Portland-place, London, W.). 1936. Pp. 66. 5s

## PSYCHONEUROTIC WORKMEN

AN article by Dr. M. Rosenfield on industrial psychotherapy [1] draws attention to the lack of provision for the treatment of psychoneuroses in industrial health services. This might be linked up with a similar lament in our correspondence columns last week when Dr. J. P. Steel complained of the difficulty of finding suitable light employment for men recovering from physical injury. In industry it often happens that a man must be of full working capacity before he can be re-employed, and Dr. Rosenfield notes that one of the concerns of the industrial psychotherapist must be to keep the worker in useful employment. The psychotherapist should therefore be in close contact with industrial conditions, and it is for this close contact that Dr. Rosenfield makes his plea. Some consider it a dangerous policy, he says, to recognise the nervous worker as one deserving of help in the same way as an injured worker deserves it. This view—the existence of which is undeniable—helps to swell sickness returns with nervous troubles camouflaged under a diagnosis of physical disease, a phenomenon we are only now coming to recognise. The lack of treatment, or of understanding, of psychoneurotic disorders places a definite burden upon industry, and Dr. Rosenfield's recommendations can therefore be supported as advantageous not only to the sufferer but to the financial side of industry. Psychotherapy of the individual, however, is not sufficient. Many other problems intrude themselves—e.g., wages, accident prevention, rent and houses, travel to and from work, dietetic problems, &c.—and here psychotherapy comes in contact with the wider subject of the contentment of the worker. The psychoneurotic symptom and the psychoneurotic disability are not identical and a large number of nervous people can be, and are, efficient workers when the working environment places no undue stress upon them. Dr. Rosenfield has, without specifying the point, recognised that the reactions of the psychoneurotic worker act as an indicator of good or bad industrial conditions. There exist the beginnings of an organisation such as Dr. Rosenfield desires; welfare workers are now regularly employed in many industrial

[1] The Human Factor, October, 1936, p. 360.

establishments, and for these workers some amount of psychological training is often provided by their own associations. Diplomas requiring psychological knowledge are granted to would-be social workers, and medical officers attached to firms are becoming aware of the need for understanding the psychological factors that concern the health of the workers under their care.

## A PHILOSOPHIC TRAVELLER[1]

THESE recollections of a philosophic traveller are well worth reading; they differ wholly from the notebook details of the usual globe-trotter both in what they include and in what they omit. In a life spent between his native Denmark and the Dutch East Indies, Dr. Wøller trotted much on his way to and fro, and whether passing on by land or sea, or sojourning briefly in port, mart, or capital, he always found time to think as well as see. As a young doctor he practised in Java and served in the Acheh campaign in Northern Sumatra. His description of the rounding up by the Dutch officials of a band of splendidly fighting rebels makes pure fine drama, and the sympathies of the reader will sway, as did those of the author, between the opposing parties, for if one party represented the march of civilisation, the other was struggling for ancient rights.

The book will break new ground for most of us because of its intimate descriptions of native life in a part of the globe so remote from most political and social reactions. But other chapters in the earlier part of the book will read as no less original. The cursive, incisive, and highly amusing remarks on places, all of which are familiar to the practised tourist and some of which most people have seen on holiday visits, convey new impressions. Here is a traveller who finds Venice and Nice, Paris and Cairo, to yield a feast for observation, curiosity, and surmise, although no guidebook is followed and no intention manifested to see the things one is expected to see. Dr. Wøller is obviously well and even deeply read in French and English as well as the Scandinavian tongues, and illustrates his unconventional philosophy with pertinent quotations throughout. Once again Mr. Claude Napier displays his graceful and learned skill in the translation of a Scandinavian language; he has clearly enjoyed the task.

## COAL SMOKE ABATEMENT

THE eighth annual gathering of the National Smoke Abatement Society came to a successful conclusion last Saturday with a general meeting at which Dr. H. A. Des Voeux presiding was able to point to the important progression of the Society. The exhibition in connexion with the meeting which was opened on Oct. 1st by the Minister of Health was noted last week. This exhibition attracted great attention and the conferences held in association with it at the Science Museum, South Kensington, added to the public interest. Sir Francis Fremantle, who took the chair at the conference on Oct. 15th, said that personal delight in the open fire would continue to prevail, but that, while recognising the charm of the fireplace, a remedy must be found for the damage it might work under existing conditions. Dr. Margaret Fishenden held that for the prevention of coal smoke it was essential to use the right fuels, and that if fuels were properly classified and distributed accordingly a great gain would have been secured. At the afternoon session of that day Dr. J. S. Owens, superintendent of the department of scientific and industrial research, read a paper on the investigation of atmospheric pollution, in which he pointed to the serious defilement of the air at well-known seaside resorts, and at the same gathering Sir Arthur Hill, director of the Royal Botanical Gardens at Kew, told a sad story of the damage done by atmospheric pollution to vegetation, while he said that the soot deposits on glass at Kew were so thick and sticky that rain did not clean the roofs of the houses. On Friday, Oct. 16th, Sir George Newman presided at the final session of the conference and held the backwardness of the country in dealing with the smoke nuisance to be a scandal. Sir Leonard Hill, F.R.S., spoke on the obstruction of light as a serious obstacle for real health, the curative value of sunlight and fresh air being recognised now in a manner quite foreign to the early Victorian era. Sir Henry Gauvain, on the same theme, spoke of a light clean atmosphere and its influence on tuberculosis, and other speakers were Sir Pendrill Varrier-Jones, director of the Papworth Village Settlement, and Dr. D. B. Cruickshank, working at the Sims Woodhead Memorial Laboratory at Papworth. These, and many other valuable contributions of knowledge on the subject, will be published in the quarterly journal of the Society, and full particulars of the Society can be obtained from the general secretary, 36, King-street, Manchester, 2.

At the close of the meeting a mantelpiece clock was presented to Dr. Des Voeux and a fitted dressing-case to Mrs. Des Voeux, the occasion being a dinner at the Rembrandt Hotel, South Kensington.

## ACETYLCHOLINE AND VOLUNTARY MUSCLE

THE division of the various neurones of the autonomic system into adrenergic and cholinergic, according to the method by which they transmit excitation, is now familiar, and there is little difficulty in demonstrating that the corresponding substances adrenaline and acetylcholine act on tissues such as smooth muscle and glands in a way that agrees with their innervation. Although acetylcholine had been detected in the perfusion fluid from voluntary muscle under nervous stimulation, and although Prostigmin, which has such a dramatic effect in myasthenia gravis, was known to preserve acetylcholine from destruction in the tissues, there was until recently the utmost difficulty in definitely linking acetylcholine with the contraction of voluntary muscle. Applied to normal muscle it had no effect. Applied to muscle whose motor innervation had degenerated it produced a slow contracture which bore no apparent relation to normal muscular contraction, and which, if anything, seemed to discount the possibility of the substance playing a part under normal conditions. During the present year, Dr. Brown, Sir Henry Dale, and Dr. Feldberg[1] have been able to show that the failure of previous experiments was due to an insufficiently intimate contact of acetylcholine with the muscle-fibres. By isolating the artery to the gastrocnemius in the cat from all anastomotic connexions, they were able to inject into it, with some force, a solution of acetylcholine which they knew would almost instantaneously penetrate every portion of the muscle. In these circumstances a twitchlike response of the muscle occurred which, though not so rapid as a twitch following nerve stimulation, resembled it sufficiently closely to show that it was a variety of the same phenomenon. They were also able to demonstrate a potentiating action of eserine, which inhibits

[1] Zest for Life. By Johan Wøller. Translated from the Danish by Claude Napier. London: Lovat Dickson Ltd. 1936. Pp. 257. 8s. 6d.

[1] Brown, G. L., Dale, H. H., and Feldberg, W.: Jour. of Physiol., 1936, lxxxvii., 394.

the enzyme responsible for destroying acetylcholine, on the response of the muscle both to acetylcholine and nerve stimulation, but not to any other form of stimulation. The inference is plainly that the nerve impulse transmits its excitation to the muscle-fibres by liberating at the motor end-plate a small charge of acetylcholine. This rationalises the action of prostigmin in myasthenia gravis, suggesting that the disease is actually due to some failure in the transmitting function of acetylcholine.

## COPPER IN CULTURE MEDIA

EXPERIMENT is indeed a hazardous business and the experimenter's path seems to be surrounded by impish circumstances. Bacteriologists noticed a long time ago that they often failed to get a satisfactory subculture if they implanted only a few organisms, and a number of workers looked into the matter, suggested various explanations, and found several methods by which the difficulty might be evaded. Drs. R. A. Q. O'Meara and J. C. Macsween have lately found [1] that most at any rate of the trouble with such an organism as the staphylococcus is due to the presence of copper which is brought into the culture medium either in the peptone or from using copper utensils in brewing it. Hence they say the known superiority of broths in which the peptone is cooked up with the meat (which absorbs the copper) instead of being added to the filtered meat extract. Others have we believe noticed the poisonousness of copper funnels for filtering hot media, but not unnaturally no one seems to have suspected that commercial peptone could contain enough of the metal to make a difference. Some peptones also have a good deal of iron, but this the bacteria seem to meet with equanimity. Is it possible that the superior keeping qualities of old-fashioned jam were due to the copper which was dissolved in considerable quantities from those magnificent stewpans which adorned the kitchen mantelpiece? Perhaps, too, such jam might prove an elegant vehicle for those who want to give copper to anæmic children?

## VIRUS OF LYMPHOGRANULOMA INGUINALE

THE discovery by Hellerström and Wassen in 1930 that lymphogranuloma inguinale is due to a filtrable virus has been followed by a large output of papers on the continent of Europe, in America, and in this country. As a result it has been demonstrated that the disease long known in the tropics as climatic bubo is identical with the lymphogranuloma inguinale of more temperate climes, while the main features of the infection have been clearly defined. The world-wide distribution of the disease is further emphasised by the series of eight reports recently published by Prof. Y. Miyagawa and his colleagues [2] of the Government Institute for Infectious Diseases in Tokyo. So far as the pathological changes and the list of susceptible animals are concerned the results of the Japanese workers are mainly confirmatory of those obtained elsewhere. They found, however, that in addition to monkeys, mice, and guinea-pigs an Asiatic squirrel, *Entamias asiaticus orientalis*, was highly susceptible to the virus by intracerebral, intratesticular, and intradermal inoculation. The possible ætiological significance of small granular corpuscles, readily stained by Giemsa's method, was especially emphasised, while the size of the virus was estimated by differential filtration to be between 0·125μ and 0·175μ, a result also obtained by Broom and Findlay.[3] While the virus was successfully cultivated on the chorio-allantoic membrane of the chick embryo, and in actual tissue cultures of testicle, brain, and spleen of normal adult mice, difficulties were encountered in growing the virus by the Maitland technique. Actively growing cells appeared to be essential for the propagation of the virus. These growing cells also contained minute granules. Though absolutely conclusive experiments are lacking there is thus a strong probability that these granules represent the actual virus particles.

[1] Jour. Path. and Bact., 1936, xliii., 373.

[2] Miyagawa, Y., Mitamura, T., Yaoi, H., Isû, N., Nakajuna, H., Okanishi, J., Watanabe, S., and Sato, K.: Japan. Jour. Exp. Med., 1935, xiii., 1, 331, 723, 733, and 739; 1936, xiv., 197, 207, and 221.

[3] Broom, J. C., and Findlay, G. M.: Brit. Jour. Exp. Path., 1936, xvii., 135.

## LOOKING AND SEEING

NATURE seldom makes the perfect experiment, and when she does the probability is that it is not recognised. When Dr. Gordon Holmes entitled his John Mallet Purser lecture [4] "Looking and Seeing," it is unlikely that he meant to infer anything of this kind, but the aptness of the title as a comment on, as well as a description of, the subject matter of the lecture must have struck his hearers forcibly. His account of a reflex determining fixation of the eyes was illustrated by two cases between which few observers would have detected any relationship. The first was that of a man who had lost all voluntary control of his eyes, although these, in common with other paralysed parts of the body, moved in response to reflex stimulation. Detailed investigation revealed an exception to this rule: if the eyes were fixed on an object, the strongest reflex stimuli failed to cause any deviation, and if the head was slowly moved the eyes did not move with it, but remained directed to the same spot. Various experiments showed that this fixation was not voluntary, but itself a reflex, exaggerated because of lack of restraint from higher centres. It was readily and easily abolished by interrupting the line of vision temporarily with a screen. The second case, or rather type of case, was the converse of this. Voluntary movement was unimpaired, and the eyes could be turned towards a given object, but fixation was deficient and the eyes immediately wandered back to their position of rest.

There are several factors which might be concerned in directing the eyes to a certain point, and even maintaining them in position, but there seems no doubt that a definite "fixation reflex" originates in the retina and that part of its arc lies in the visual cortex. Holmes points out that without such a reflex it would be next to impossible to keep looking at one object. Even if it were quite stationary, the observer would constantly be making movements of the body, and slight postural adjustments of the head, each of which would require a fresh voluntary effort directed to compensatory contractions of the eye muscles. If the reflex is impaired it cannot be successfully replaced by willed movements, whereas if it is exaggerated it resists interruption by other reflexes and can only be terminated by removing the stimulus. In normal circumstances, then, the activity of the extrinsic ocular muscles is determined by balanced reflexes, the fixation reflex tending to inhibit movement, except in so far as this keeps the field of vision unaltered, and other reflexes, chiefly initiated by sudden visual, auditory, or labyrinthine stimuli, tending to produce sudden movement. Such

[4] Irish Jour. Med. Sci., September, 1936, p. 565.

a balance of forces fits in well with modern physiological conceptions, and if correctly adjusted would ensure that the attention was neither too fixed nor too easily distracted. Capable of superseding both sets of reflexes are the important "volitional" impulses from the frontal cortex, whereby the eyes are moved about deliberately. The anatomical implications of this theory agree well with what is known of the tracts subserving vision and ocular movement. A short time ago we commented on a paper by Sir Arthur Hall [5] on opening and closing of the eyes, in the course of which he writes: "Whilst closure of the eyes may serve various purposes, it is certain that one of these is to exclude light, and that until light is thus excluded the nervous mechanism which controls eye closure is not satisfied." Holmes's lecture lends point to this, for it adds to the importance of closure of the eyes during sleep. It may also explain, though here we become rather speculative, how somnambulists are able to perform complicated but purposive acts while apparently unconscious, reflex fixation, in the absence of distracting stimuli, not needing to be reinforced by conscious attention.

## MEDICAL RESEARCH COUNCIL: NEW APPOINTMENTS

BY an order of the committee of the Privy Council for medical research, Lord Balfour of Burleigh and Prof. John Mellanby, M.D., F.R.S., Waynflete professor of physiology in the University of Oxford, are appointed members of the Medical Research Council in succession to the Marquess of Linlithgow and Prof. E. D. Adrian, M.D., F.R.S., who retired in rotation on Sept. 30th, 1936. The appointment of Prof. Mellanby was made after consultation with the Medical Research Council and with the president of the Royal Society. Lord Balfour of Burleigh has now been appointed by the Medical Research Council to be their chairman, also in succession to Lord Linlithgow, and this has been approved by the committee of the Privy Council.

## FOREIGN BODIES IN ŒSOPHAGUS AND BRONCHI

Prof. A. Caiado de Castro gives an epitomised account in a supplement to a bulletin (No. 3) issued by the Secretary-General of Public Health of Brazil of 300 cases of foreign body removed by endoscopic methods from the bronchi and œsophagus, which is preceded by a brief description in Portuguese, French, English, and German of the technique employed. The use of anæsthetics for this work has been completely abandoned at the Oto-Laryngo-Ophthalmological Clinic of the Municipal Department of Rio de Janeiro since January, 1932, except that on a very few occasions local anæsthesia has been employed for foreign bodies buried in areas where the œdema and spasm were severe. Great importance is placed on the position of the patient. He is wrapped in a sheet with the feet together and the hands on the thighs, and is fixed to the table by means of three straps, respectively at the level of the sixth dorsal and fifth lumbar vertebræ, and at the lower third of the thighs. He is placed in the dorsal position, with the head and shoulders beyond the end of the table supported by an assistant sitting on a stool to the right of the patient. A second assistant controls the Doyen gag, and a third works the aspirator and times the procedure; considerable importance is attached to the speed of operating. Brünings tubes are preferred, with Chevalier Jackson's forceps. It is obvious that a very large number of cases of foreign body come to this clinic, and that Prof. Caiado de Castro and his colleagues have acquired great skill in their extraction. In the large majority of cases the foreign body was lodged in the œsophagus. This monograph in Portuguese is sumptuously produced, with photographs of every foreign body, of the disposition of patient and assistants, of the instruments employed, and of the municipal hospital. It could be wished, however, that, in addition to the short history of each patient, an account of any unusual or complicated case had been given, with a general summary of the results, for it is only by reading through every epitome that such information can be obtained.

[5] See THE LANCET, August 1st, 1936, p. 269.

## MEMORIAL TO DR. M. D. EDER

THE desire has been expressed in many quarters to establish a memorial to the late Dr. David Eder to commemorate his services to medicine, to social science, and to Zionism. It is felt that not only psycho-analysts and Zionists would like to be associated with this memorial, but also many working in the spheres of medicine and social science who knew of Dr. Eder and of his work. A letter commending the proposal reaches us over the signatures of Albert Einstein, Sigmund Freud, Sir Philip Hartog, Ernest Jones, J. L. Magnus, Lord Melchett, Redcliffe N. Salaman, Arnold Sorsby, Chaim Weizmann, and H. G. Wells. After recalling Dr. Eder's great services to the Hebrew University of Jerusalem and to the Zionist movement they continue, "His work in the sphere of psycho-analysis is well known to members of the International Psycho-Analytical Association, and his place in the history of psycho-analysis was appraised in the *International Journal of Psycho-Analysis* in the April issue for 1936. The many tributes to his memory which have appeared in the press both of this and of foreign countries during the past few months bear witness to the loss which the causes of social effort and scientific inquiry have suffered by his passing. We who were privileged to know and collaborate with him, mourn the loss of an untiring worker and a courageous pioneer, one whose ever-helpful personality will always live in our memory. We are sure that many will wish to perpetuate his memory by assisting to further an object he would have had so much at heart." The object here mentioned is the establishment of a psychological library, bearing Dr. Eder's name, at the Hebrew University, and Mrs. Eder has agreed to present his own library as a nucleus. Subscriptions may be sent to the hon. secretary and treasurer, Mr. Maurice Sorsby, F.R.C.S., 86, Harley-street, London, W.1.

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ON Tuesday, Nov. 3rd, Dr. Edward Mapother will deliver the Bradshaw lecture of the Royal College of Physicians of London, his subject being the integration of neurology and psychiatry. On Nov. 5th and Nov. 10th Dr. J. D. Rolleston will give the FitzPatrick lectures, speaking on the history of the acute exanthemata. The Mitchell lecture will take place on Nov. 12th, when Dr. R. R. Trail will speak on recent aids to the prognosis of pulmonary tuberculosis. All the lectures will be given at 5 P.M. at the College, and members of the medical profession will be admitted on presentation of their cards.

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ROYAL CANCER HOSPITAL (FREE), LONDON.—An appeal for £150,000 is being made by this hospital in order to modernise the wards, extend the research institute, and enlarge the nurses' home.

# PROGNOSIS

*A Series of Signed Articles contributed by invitation*

## CXVIII.—PROGNOSIS IN THE MANIC-DEPRESSIVE PSYCHOSIS

CLEAR-CUT issues are so rare in psychiatry that a definite diagnosis, carrying with it a definite prognosis, is almost too good to be true. It is, however, certain that the term manic-depressive psychosis is often used in this decisive way: when a patient has been so diagnosed, it is taken for granted that he will recover completely, though he remains liable to further attacks of affective disorder; the only points that are doubtful are the duration of the present attack and the date of any subsequent ones. Such a view of the matter assumes that the diagnosis can be made with confidence, and that the cases have always a benign but repetitive course. This is unfortunately wrong. It is impossible to distinguish sharply between manic-depressive psychoses and other forms of disorder, some recurrent, some chronic, in which an excessive emotional change is the most striking aspect of the illness. It would be more correct to say that in the wide range of affective psychoses, both major and minor, there is at one extreme a group in which constitutional factors are vastly more potent than external circumstances, and in which, if the patient does not die from hunger, suicide, violence, or intercurrent disease, he recovers completely, though not without risk of recurrence; while at the other extreme there is a group of relatively mild disorders, mostly with depression or anxiety, on the course of which their environment exerts great influence, the drift being towards chronicity. Between these extremes lie many, perhaps the majority, of cases of affective psychosis. To attempt an exclusive twofold classification into manic-depressive or endogenous cases, and neurotic or reactive ones, is to insist on the extremes, as though one were to classify all mankind into the fat and the thin. There are a great number of cases of affective disorder, in which it is impossible to tell from their clinical form alone what will be their outcome; that can only be done by a study of their previous history and personality, and an estimate of the treatment and other circumstances to which they will be exposed. Moreover, what seems a typical affective psychosis may be found to be symptomatic of some disease such as cerebral arteriosclerosis, G.P.I., myxœdema, cerebral tumour, pernicious anæmia, or other "organic" condition. This may be true, although there be no signs of dementia or confusion, but only mania or melancholia. The prognosis in such a case will be that of the disease, and not of the usually benign psychiatric syndrome which happens to fill the clinical picture.

Since therefore the weighty question, "Will the patient recover from this illness?", is answered by psychiatric diagnosis alone less fully than is sometimes supposed, it is all the more necessary to have general rules of prognosis to take the place of a diagnostic short cut to that end. If this affective syndrome be regarded not as a disease, running a definite course, but as a type of reaction, in which a pathological emotional disturbance is the chief feature, it follows that the prognosis must depend on (1) the inherited predisposition, and evidences of it in constitution and personality; (2) the experiences which have moulded the patient and to which he is still exposed and responsive; and (3) the tendency of an emotional reaction to subside or to drag on. More briefly, the prognosis depends on heredity, on environment, and on biological form. So, in the main, does choice of treatment.

### Heredity

Besides the prognosis for the patient, there is the prognosis for the next generation—the question whether the children of an affected individual will be likewise affected. This genetic prognosis can go no farther than to say that the probability of transmission is highest where both parents have had well-defined attacks of mania or acute depression, or where in the one unaffected parent there is a notably sanguine, melancholic, or cyclothymic temperament. Where one parent is healthy, and the other has had periodic attacks of depression or mania, there is a likelihood that a third of the children may show the disorder.

As for prognosis in the ordinary sense, the chances of complete recovery from an attack will be good where a typical affective illness, periodic or solitary, has occurred in one or more of the patient's antecedents. It may also be cautiously assumed that eccentric, neurotic, or schizophrenic antecedents, especially parents, make the outlook for complete recovery rather less satisfactory. The hereditary endowment of the patient may often be inferred from his temperament and even from his bodily habit. If the former is of the syntonic type, with its prompt affective responses, and the latter shows "pyknic" features—short-necked, thickset, paunchy, plethoric, broadfaced—then the chances of the attack being uncomplicated and followed by a return to health are much higher than if there have been indications of a schizophrenic or other psychopathic tendency. Moreover, the patient who has for years before his illness shown morbid traits, who has been anxious, or quarrelsome, or suspicious, or odd, or solitary, or obsessional, or in some other way has shown that he is constantly at odds with himself, as well as with his surroundings—such a patient is not going to be cured of his maladjustment by having an affective flare-up. A sortie does not end a siege. Should he recover from the acute illness, he will still be likely to show the features of personality that have troubled him hitherto. "Recovery" from the attack must therefore be a qualified notion, meaning recovery to the status quo ante rather than to some ideal state of mental health.

### Environment

To trace the interplay between the patient and the experiences that have come his way is an intricate, sometimes an impossible, task; but some notion of how he has developed and how he has responded to his environment may be of considerable value in understanding the illness and forecasting its course. One may see what kinds of traumata have upset him, how quickly he has recovered from them, what effects they have had on subsequent behaviour and outlook. Previous happenings may be significant in making it clear why some recent occurrences should have provoked the present outbreak. But such investigations have their limits: it is not possible or desirable to make the fullest analysis of every patient's history. For a working

prognosis, it is often sufficient if one gets a general grasp of the patient's response to his environment, and of the events which led up to his present illness. If his emotional state has for years been at the mercy of his surroundings, and neurotic instability has been his chief way of dealing with his troubles, the outlook is less promising than it would otherwise be. It is more contingent on his receiving the sustained guidance and support of psychotherapy; and his recovery will be especially difficult or incomplete if through financial, physical, or other handicaps life continues to bear hard upon him.

The harmful stresses that must be relieved to promote mental health, have to be worked out separately for each patient and given due weight in assessing his prognosis. There are on the whole few affective illnesses so endogenous that no reactive elements can be found in their immediate causation or in their duration and content, just as, on the other hand, there are few affective illnesses—whether called neuroses or not—in which one can help inferring a constitutional factor. The task in prognosis, here closely linked to ætiology, is to assess the weight and interplay of these forces, on the basis of psychological understanding and clinical experience—neither of which can be written down. It is false for prognostic or other purposes to make an antithesis between endogenous illnesses which are assumed to be self-limited, and reactive ones which respond to psychotherapy.

## Clinical Form

It may be said, simply, that severe emotional upsets ordinarily tend to subside, but that mild emotional states, when often provoked or long maintained, tend to persist, as it were, autonomously. Hence the paradox that a gross blatant psychosis may do less damage in the long run than some meagre neurotic incubus: a dramatic attack of mania or melancholia, with delusions, wasting, hallucinations, wild excitement and other alarms, may have far less effect on the course of a man's life than some deceptively mild affective illness which goes on so long that it becomes inveterate. The former comes as a catastrophe, and when it has passed the patient takes up his life again, active, cheerful, normal in every way, while with the latter he may never get rid of his burden.

There are a number of statistical reports on prognosis, based on the distinction between recurrent "typical" episodes of depression or elation and long-standing variants and exaggerations of neurotic personality. The main points that emerge from these are as follows: a first attack of mania will very seldom be the only one, whereas the first attack of melancholia may be the only one. There may be a single attack at puberty or at the climacteric. Melancholia is much more likely to become chronic than mania. Periodic attacks of mania may cease in middle life; periodic depression is less likely to. The presence of features characteristic of schizophrenia, hysterical or other modes of reaction make the prognosis more dubious. Hallucinations and delusions are in themselves of little prognostic importance: they are more frequent in cases that turn out badly, but it is their form and development that is significant, not their mere occurrence. A transition from mania to melancholia, or the reverse, is commonly gradual, as is recovery from either. Only previous history will enable one to foretell the duration of the attack and whether it will be of the alternating kind, or the only one. Subsequent attacks will probably be of the same type as their predecessors. After recovery complete insight may not be attained, especially in resentful manic patients and melancholics who are sensitive and suspicious.

These statistical observations have largely been made on cases admitted to mental hospitals. If one enlarges the scope of the inquiry to include those seen in a psychiatric clinic, and to ascertain more about them after recovery than merely their capacity to earn their living and rub along in the ordinary way, it becomes evident that the outcome is by no means uniformly good. Crude "pure" mania or melancholia, coming on abruptly in a healthy person, is, it is true, likely to clear up, leaving not a trace behind, but there are many patients who after the illness remain, or revert to being, excitable, gloomy, tired, or anxious; careful study of the past history will in such cases be more profitable for prognosis than examination of the present symptoms. So long as the illness is in time of occurrence and content closely related to an adequate and transient precipitating factor, recovery should usually be prompt. The longer the disturbing factor continues to act, and the more the patient has shown a tendency to mild but very persistent affective reactions, in which anxiety, fatigue, and hypochondria have been in the forefront, the poorer is the outlook for complete recovery. For such patients, psychotherapy and adjustment of their environment to suit them will be much more necessary and efficacious than for those with catastrophic reactions, where periodicity is more conspicuous and reactivity less so, and the normal or interval personality is well adjusted and tolerably stable. Prognosis, therefore, will be influenced by the choice and possibility of appropriate treatment.

The most satisfactory outcome is to be looked for where the onset is abrupt, the clinical features those of uncomplicated "classical" mania or melancholia, the previous personality healthy and syntonic, any previous attacks well-defined affective ones, and no physical disease, especially of the circulatory system, to be discovered. Gross hypochondriac ideas, nihilistic delusions, much admixture of schizophrenic or other anomalous symptom, and true stupor are unfavourable points; severe depersonalisation often means a long illness. As people grow older, the intervals between the attacks may grow shorter and the attacks themselves longer. Sometimes after a series of attacks the patient becomes dulled, shows impaired initiative and judgment, and is less able than formerly to deal with his daily problems, though in other respects or superficially he would be regarded as healthy.

## Death

Death during an attack is not so rare as is thought. In the Massachusetts mental hospitals, where statistics are well kept and diagnosis is fairly uniform, the death-rate per 1000 of manic-depressive first admissions is 36, and for readmissions 48. These deaths are not restricted to patients in middle life or old age, though of course the majority occur over the age of 50 and are due to circulatory disease. Essen-Möller found that after discharge from hospital manic-depressive patients had a mortality-rate one and a half times that of the average population. Deaths by suicide, which scarcely enter into mental hospital statistics, account for an unknown, but certainly large, number of deaths from manic-depressive psychosis, often at a stage where the gravity of the condition is missed and "a change of scene" or "a course of special treatment" has

(*Continued at foot of opposite page*)

# POST-GRADUATE LECTURES

SHORT courses for former students are still in progress at some of the London teaching schools. Below we publish abstracts of lectures given by Dr. Wall at the London Hospital, Dr. Hunt at St. Mary's, and Dr. Wigley at Charing Cross.

## THE CARE OF ARRESTED PULMONARY TUBERCULOSIS

(DR. CECIL WALL)

THE treatment of active pulmonary tuberculosis has in recent years passed out of the control of the general practitioner, but the after-care remains within his special province.

*Prognosis.*—The Frimley Sanatorium was opened in 1905 and of the 97 patients treated there in that year 10 are still alive. Eight are still working, and of these 8, 6 had tubercle bacilli in the sputum 30 years ago. I do not know the ages of these patients but assume that when admitted they were at least between 20 and 30 and now are between 50 and 60. At the best we cannot assume that more than 10 per cent. have reached the age of 60.

In the last volume of the Brompton Hospital reports there appeared a careful analysis of the after-histories of 8766 patients treated at Frimley since 1905. Dr. Wingfield and his colleagues have attempted to assess the expectation of survival for another five years of the patients in different age-groups for each year after their discharge. It was shown statistically that the highest mortality occurs within the first two years following discharge, and that the expectation of survival improves year by year subsequently until the survivors reach the age of 48 to 52. That is to say, that while about half of those aged between 36 and 40 who have survived one year after discharge are likely to live another 5 years; of those who have survived 10 years, nine out of ten have an expectation of another 5 years of life; but at the end of 15 years only eight out of the ten then surviving have as good a future prospect. This conclusion seems to bear out the opinion gained from clinical experience that the ultimate prognosis of arrested pulmonary tuberculosis may be summed up in the phrase "premature senility." Another conclusion reached by the authors is that the mortality-rate varies directly with the anatomical extent and pathological stage of the disease when first brought under treatment rather than with the age or sex of the patient. This conclusion is justified by the records of the patients during the first 3 or 4 years after discharge, but it is noteworthy that after this period the expectation of survival of patients who had extensive disease improves in subsequent years with greater rapidity than that of those whose lungs were involved to a less extent.

Much light is thrown upon the prognosis in pulmonary tuberculosis by statistical investigation, but the method cannot be employed to elucidate the conditions which tend to hasten or retard a fatal ending. Some information of value in this connexion may be obtained by investigating the circumstances in which fortunate survivors have achieved prolonged existence. Such investigation may reveal certain common factors which may coincide with those usually accepted as favourable, or it may show that certain conditions often regarded as indispensable for recovery are frequently not present.

To-day I propose to tell you the conclusions which have forced themselves upon me after 30 years' clinical work at a chest hospital.

The Frimley report draws attention to the fact that pulmonary tuberculosis may progress for a long period without producing any symptoms of ill-health, so that the disease is already of considerable extent when the patient seeks medical aid. It is suggested that what is true of the initial attack is also true of recrudescence after arrest. I think that anyone with any experience of pulmonary tuberculosis will be inclined to agree with both these statements and realise the importance of trivial symptoms which the majority of patients would ignore.

The symptoms of pulmonary tuberculosis fall into two groups, those such as cough, expectoration, and dyspnœa which are due to the local disease, and those which may be included under the term constitutional disturbance presumably resulting from the absorption of tuberculotoxins into the circulation. Symptoms belonging to the latter group are often slight and evanescent, and consequently are dismissed as unimportant by the patient. They are likely to occur as the result of some physical overstrain and to disappear rapidly on resting. It is this fact which seems to be the basis of the spes phthisica.

In the *management* of a case of arrested tuberculosis it is of the greatest importance to study the minor manifestations of constitutional disturbance. Pyrexia, loss of weight, general aches and pains, night sweats, and the like are likely to attract attention, but these should count as major symptoms and a warning should be given before they develop. In this connexion I would remind you that apyrexial fever is a common phenomenon in arrested pulmonary tuberculosis; the normal temperature of many of these patients is below 98·4°, and a rise to that level may indicate fever. The minor symptoms are numerous and tend to vary with the temperament of the individual; one of the commonest is the sense of fatigue generally associated with fidgeting; others are dyspepsia, anorexia, headache, insomnia, palpitation, and irritability. The only safe rule for the patient whose tuberculosis has been arrested is to assume that if in any way he does not feel quite up to the mark he has overtaxed his strength and requires an overdose of rest. Of course, just as in initial attacks, arrested disease may at times take on fresh activity in the complete absence of symptoms: to guard against such a mishap periodic physical examination aided by radiography is desirable.

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been advised, more riskily than the adviser knew. If all the cases of death by suicide during a phase of morbid depression and all the deaths from infectious disease (including pneumonia) of manic or depressed patients could be ascertained, it would surely be oftener remembered that this can be a lethal illness and that suitable hospital treatment may be called for, though there be no gross psychotic features, no history of previous attacks, and no lack of insight or of psychological causes for the breakdown.

AUBREY LEWIS, M.D., M.R.C.P.,
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It may be objected that this advice encourages valetudinarianism, but a measure of valetudinarianism is the price the patient has to pay for prolonged existence. Speaking generally, if a threat of recrudescence is recognised early the patient's resistance will be restored after a short course of treatment. Any increase of the focal group of symptoms will naturally call for particular care, but hæmoptysis requires special consideration. Repeated small hæmorrhages, especially if associated with any constitutional disturbance, must give rise to anxiety; but in old fibrous arrested disease a sudden free hæmoptysis, particularly if the patient at the time feels fit, may be the result of the rupture of a small aneurysm of the pulmonary artery and may not lead to any extension of the disease. A short period of rest and close observation to exclude evidence of constitutional disturbance may be all the treatment required.

Difficult problems often arise with regard to the place of residence and the occupation of an individual in whom pulmonary tuberculosis has been arrested. In every case except when the area of lung involved was very small there will be some impairment of physical strength and vitality; change of occupation, even if desirable, is seldom possible, but if there is a change it should be in the direction of lighter rather than of heavier work. This consideration brings us at once into conflict with those that hold that tuberculous convalescents should seek an outdoor employment. I do not consider it good advice to suggest that a city clerk should become a farm labourer or a bus conductor merely because he would be kept thus in the open air. There are very few outdoor occupations which do not require muscular exertion in excess of the capacity of the majority of those whose lungs have been damaged.

Unless the patient can afford to retire it is probable that he will have to return to his former occupation. There is a popular belief that anyone who has had a tuberculous lesion must henceforth live in the country. Fresh clean air is of course desirable for everybody, but if country residence involves a long journey to and from work the disadvantages may soon outweigh the advantages. I have known many patients who have kept well when living and working in London, and I do not believe it necessary or even advisable to urge them to live far from their work. The limitation of physical exertion is of much greater importance than climatic treatment. A hot climate is usually held to be unsuitable, but I have known several patients who have kept well in the tropics where labour is cheap and physical exertion can be reduced to a minimum.

Questions with regard to the diet of patients will almost certainly be put. I am convinced that the best answer is an ordinary mixed diet such as is found suitable for the healthy; the meals should be regular and well spaced with intervals of at least three hours to permit full digestion. Frequent feeding is likely to lead to dyspepsia. Extra milk is not desirable; milk is a good food but is bulky and often causes discomfort. It may be necessary when there is dyspepsia due to tuberculotoxæmia, but in cases of arrested disease more concentrated foodstuffs are better. Alcohol in moderation may be permitted as a luxury, but not as a medicine; used to mask a sense of fatigue it is likely to be harmful. In my experience habitual alcoholism is more frequently the result of chronic tuberculosis than tuberculosis of alcoholism. Smoking in moderation appears to be harmless provided that it does not aggravate the cough.

## FIBROSITIS

(DR. THOMAS HUNT)

"FIBROSITIS" is a diagnosis applied to so many muscular aches and pains that it will be well to begin by giving it some sort of definition. It is a condition of diffuse or localised exudations in the fasciæ and interstitial tissues of muscles and ligaments leading to the presence of tender "nodules" in the affected parts: the ligaments around joints especially suffer and this is the reason why treatment in osteo-arthritis, for example, may do much good symptomatically though the joint itself remains unchanged; for probably half the symptoms of osteo-arthritis are due to the associated fibrositis. Fibrositis causes aching pain, often very severe; this is mainly present when the muscles are stretched or used, and complete *rest* will usually relieve it considerably if not completely. In this respect the pain differs from that of neuritis or perineuritis (e.g., sciatica) in which it is spontaneous and often not improved by rest. Similarly warmth will nearly always help fibrositic pain whereas it may make the pain of neuritis worse, especially when applied in the form of electrical heat such as diathermy.

The nodules of fibrositis are best felt when the muscles are on the stretch; firm and deep palpation may be required to detect them for they are often quite tiny. A tender lump felt in the neighbourhood of a *slack* muscle is likely to be outside the muscle (e.g., thrombophlebitis).

The factors mainly concerned in the causation of fibrositis are chill, trauma, fatigue, and infection. Generalised fibrositis is nearly always associated with some focus of infection; localised types such as lumbago and intercostal fibrositis are more often due to strain and chill. *Chill* does its worst upon stationary muscles which are on the stretch, and when it operates for a long time upon muscles that are fatigued. The tired man asleep in a draught of cool air offers an ideal chance. Hence fibrositis is frequently seen in active energetic young men and is in no sense a condition only of old people. It follows that attention to little details of daily life will often do more than anything else to prevent attacks; a chronic fibrositic back may be the result of a bad position when driving a car, or of an occupation that means constant bending—as in some of us leaning over bedsides! Recurring stiff necks are often due to faulty position asleep in bed; other cases are associated with a bad habit of doing violent physical exercises at the end of a day when muscles are already tired. In generalised fibrositis some toxic factor can nearly always be found; among my own patients one-third of the cases directly followed tonsillar infection while next in frequency came sepsis in or around the teeth. *B. coli* infection in the genito-urinary tract is often found, but I have only had two patients that did really well when the urine became sterile. Gonococcal infection must be remembered, but in my experience appendix, gall-bladder, colon, and cervix infection are less common causes.

Muscular pains similar to those of general fibrositis may accompany arterio-sclerosis or obesity, especially when fat is put on rapidly; they may thus often be found at about the menopause in women. Disuse of muscles lessens blood flow through them and increase in fat probably causes pains of vascular origin associated with the accumulation in the muscles of metabolic end-products which are no longer normally removed by the inadequate blood-supply. Here the remedy lies in reduction in weight and

increased use of the muscles by exercises and the aid of massage; in some cases thyroid extract is helpful.

Of the local types of fibrositis "lumbago" is most often seen; this may be true lumbago which follows stretching or actual rupture of fibres of the erector spinæ, or a low backache due to fibrositis around the sacro-iliac joints. In both conditions pain is apt to run down the outer side and front of the leg, in contrast to sciatic pain which always goes down the back of the leg. In lumbago the ilio-tibial band and fascia lata of the leg are often involved, and in raising the extended leg to elicit Lasègue's sign for sciatica the stretching of these ligaments may give rise to pain that is wrongly attributed to the sciatic nerve.

Chronic backache is rarely due to constipation and chronic nephritis is also an uncommon cause. A renal calculus is, however, always to be thought of, especially when the chronic aching is associated with attacks of more severe pain like true colic. In both lumbago and renal calculus jolting (as in a car) may increase the pain, but as a rule bending and movement of the back muscles produces more pain in patients with lumbago than in patients with calculus. Oxaluria is a condition which may sometimes be mistaken for fibrositis of the back, and repeated examinations of the urine for red blood-cells and oxalate crystals may be necessary to exclude this cause. I can remember three cases, regarded as fibrositic, which were completely relieved by diet for oxaluria—in which one must not forget to exclude coffee, chocolate, cocoa, strong tea, and grape fruit, as well as the more often remembered foods such as strawberries and rhubarb.

Intercostal fibrositis, or pleurodynia, may be mistaken for pleurisy, or (on the left side) coronary artery thrombosis. The pain usually follows a chill; it is very violent, of sudden onset, and worse with every movement and with coughing, breathing, or sneezing. The chest wall is often very tender on palpation, and is moved as little as possible so that on auscultation the air entry on the affected side may be poor. The most helpful points in diagnosis are the absence of cough, a rub, fever, or any change in blood pressure, together with the great pain on pressure and movement, and a history frequently of direct chilling of the side.

The essential treatment of fibrositis is local, together with the prevention of strain, fatigue, and chill and removal of foci of infection when these can be found. *Massage* is the most important remedy, and a fibrositis that shows no improvement with correct massage has probably some complicating factor such as scoliosis, osteo-arthritis, or persistent infection. Physical treatment may also fail because it is not given persistently enough or firmly enough: each application should always be followed by rest and warmth, and it is best given if possible in the patient's home. Massage for fibrositis should become progressively stronger and deeper, and is rightly painful at the time; on the continent it is said that there is "no cure without bleeding"—meaning that the treatment should be energetic enough to cause actual hæmorrhage around the nodules. Heat can often be applied as successfully by simple methods (linseed poultice or a hot iron over brown paper) as by elaborate electrical apparatus. If in doubt whether an acute neuritis is present, it is wise to withhold all forms of electrical heat such as diathermy.

Some of the greatest successes of spa therapy are found in cases of fibrositis, and correctly given baths are often very beneficial. Unless there is an indication for weight reduction, or treatment of oxaluria or gout, special rules of diet are not necessary except to insist upon avoidance of overeating and of alcohol, which usually increases fibrositic symptoms. No drugs surpass the usefulness of the salicylate and aspirin compounds, and these may rightly be ordered in large doses—e.g., aspirin grs. 15 four hourly—at least in the acute stages.

## PRURITUS

(DR. J. E. M. WIGLEY)

PRURITUS, from the Latin *prurire* to itch, is a common cutaneous symptom. It is not the name of an organic cutaneous disease and the word is not synonymous with prurigo. Prurigo is an organic disease characterised by extremely itchy papules or nodules, often enlargement of lymphatic glands, and a very chronic course. The adjective to be used to describe an itchy condition is "pruritic."

Itching is a symptom which is present in every one of us at some time or other, either as a mental condition (Cassius was accused of having "an itching palm") or as a result of the action of some irritant; but the intensity of the subjective phenomena varies greatly in different subjects. What would excite an uncontrollable desire to scratch in some, seems to cause others little or no discomfort; though if the sensation is really severe even the most strong-willed or phlegmatic can seldom resist it for more than two or three minutes. With the giving way and scratching the symptoms often become worse, and a mild degree of pruritus may be greatly aggravated by the indulgence—a sequence of things not unknown in other conditions.

We do use the word pruritus to describe an often very distressing condition, which is essentially a sensory-neurosis of the skin, and in which any objective signs are secondary to the scratching indulged in, or to the medicaments applied either by the sufferer himself, or even prescribed by his medical attendant.

I propose to consider pruritus under three headings: (1) as a symptom of cutaneous disease; (2) in association with disease of internal organs; and (3) as an "essential" condition in which no organic disease is demonstrable.

*Pruritus as a symptom of cutaneous disease.*—This is by far the commonest of the three and every patient who complains of itching should be regarded as suffering from a cutaneous disease, or as a host of parasites, until exhaustive examination and investigation has been carried out. The commonest skin diseases which are nearly always accompanied by itching are: erythema, eczema and/or dermatitis, urticaria, papular urticaria, lichen planus, pityriasis rosea, herpes zoster, dermatitis herpetiformis, and keloid.

Occasionally psoriasis may be intensely itchy, but more commonly this is due to excessive enthusiasm in treatment. Syphilis "the great imitator" has been known to cause itching eruptions, though this is extremely rare. Sometimes lupus erythematosus can be very itchy.

But, as Dr. J. T. Ingram has recently and very truly said, "the commonest cause of itching is the itch," and to this may be added other parasitic infestation. I am quite convinced that, if every patient who complained of itching was regarded as suffering from scabies or pediculosis until it was proved that he was not, many people would be spared weeks, and even months, of unnecessary suffering and many medical reputations greatly enhanced. The parasites, both the acarus and the pediculus, are no respectors of persons, and, as Dr. Sequeira always taught, "linear scratch marks on the back should always make you search the underclothing for pediculi,

even if the patient be an archbishop." Now that there is a bathroom in every "key flat" it is often very difficult to find the parasites; scabies, for example, can be one of the most difficult of all diseases to diagnose in a cleanly person. The distribution of the eruption is suggestive, however, and a really thorough search for the parasite will always fully repay the time and trouble taken. Dr. Henry MacCormac has recently recalled our attention to the transmission of parasites from animals, especially a variant of scabies from the domestic cat. The animal need not of necessity be a domestic one; the camel and the lion harbour an acarus, but I feel that the cases of infection from them must be scarce.

*Pruritus associated with disease of internal organs.*—Having excluded diseases of the skin and the ravages of parasites, it is essential to consider the diseases of internal organs as a cause of itching. The first disease that comes to all your minds is diabetes, and I need not say anything about that beyond remarking how frequently we see cases both in the out-patient department and in our consulting-rooms in which the urine has not been examined. Diabetes can be responsible for a local eczema of the genitalia, more often in the female, as well as the more generalised pruritus. Bright's disease is also sometimes associated with generalised itching—another good reason for examining the urine. You will all have thought of jaundice as a cause of itching, but other affections of the liver—cirrhosis and even carcinoma, as well as gall-stones—are occasionally responsible for it. Both ovarian disease and pregnancy are sometimes associated with pruritus, whilst it is often present in leukæmia. Hodgkin's disease is sometimes preceded by, as well as accompanied by, an itchy papular eruption, at first limited to the shins, which may be very difficult to differentiate from scabies.

The presence of various intestinal worms is sometimes the cause of itching, and Major-General W. P. Macarthur has recently drawn attention to the *Enterobius* (*oxyuris*) *vermicularis* as a cause of generalised pruritus as well as the more localised pruritus ani.

Under this heading, I may consider several drugs which give rise to itching, and it may be somewhat of a surprise to learn that they are mostly of the hypnotic type. Cocaine is well known for this and addicts will often produce the most quaint objects which they say are causing their irritation by "crawling under the skin." Allonal, Veronal, chloral, and antipyrin can all cause irritation, and it has often been observed that though morphia will relieve irritation at first, the symptom returns with increased vigour when the effect wears off. Phenolphthalein, becoming so widely used in chocolate laxatives, can cause irritation as well as various types of eruption.

*Essential pruritus in which no organic disease is demonstrable* is divided into two main groups—general and local.

Pruritus occurring uniformly over the whole cutaneous surface is rare, but it is quite common for waves of irritation to spread over the body. The itching is rarely continuous but is subject to paroxysms or crises and occasionally to complete intermission. Rubbing and scratching may extend the pruritic areas, may produce new ones, or transform a localised into a diffuse pruritus. Another result of rubbing and scratching may be a temporary cessation of the itching, perhaps long enough to allow the patient to go to sleep, or the production of a feeling of relief and comfort almost amounting to a feeling of well-being. This sensory cycle has been called by the French *Onanisme pruritique*.

Such generalised examples of pruritus are more commonly seen in elderly people, whose skin has become somewhat dried and inelastic. Sometimes the initial paroxysm is initiated by exposure to cold air, or it may on the other hand follow the taking of too many and too hot baths, an "am'able weakness" not at all uncommon among the female sex.

The commonest example of localised pruritus, and often the most difficult to deal with, is that affecting the anus and genitalia.

Pruritus ani is more common in males than in females and varies in intensity from a mild and transitory sensation to one of such severity that the sufferer is forced to scratch in spite of any circumstances of publicity or other consideration. It chiefly affects the middle-aged or elderly but it can occur at any age. Very often the most careful investigation fails to show any local cause, such as piles, anal tags, or discharges, and the skin does not even present any sign of scratching. Here I should like to add that the infection of the skin around the anus with the fungus, monilia, giving a whitish, sodden, and moist appearance, is usually accompanied by intense irritation.

Pruritus vulvæ is an equally distressing condition though it is rather more often associated with an obvious local cause, such as a vaginal discharge, diabetic urine, or gynæcological abnormalities. Here I would say, in the words of the late Dr. R. W. MacKenna, "it is well, when considering pruritus round any orifice of the body, to look for the cause inside the orifice." The effects of scratching are more often seen about the vulva in the form of excoriations, eczematous states, &c., whilst in cases of long standing the skin undergoes kraurotic changes and becomes white and dead like parchment and may be the seat of epitheliomatous changes.

Pruritus of the scrotum is much less common, but may be extremely resistant to treatment.

The palms and soles may be the seat of itching. This is again more common in elderly people and is more often associated with circulatory disturbances than with the more "popular" idea of gout or rheumatism. Itching of the nose is a common premonitory symptom of the common cold. It may also be a very troublesome occurrence during a visit to the dentist. The ears, again, are occasionally very itchy, but this is much more likely to be due to an accumulation of wax than to subconscious knowledge of unheard flattery. In some people pruritus tends to occur in the hairy regions of the body. It is often pronounced about the time of puberty when hair growth is at its maximum.

Time does not permit me to go into the question of *treatment* at any length. It will be obvious from what I have said that a thorough search for the cause will enable many patients to be relieved by the remedies appropriate to the cause. Unfortunately many cases, especially of the localised pruritus of anus or vulva, are examples of the idiopathic or essential pruritus. In these it is better to try the effect of simple soothing remedies before resorting to such remedies as the injection of A.B.A. (Anæsthesine, benzyl alcohol, and ether, in sterile olive oil) or the like, though I have seen good results from their use. Judicious exposures to X rays are often effective, but I must add a word of warning against their being used by one who is not fully aware of their potency for harm as well as good. Of the operations for dividing the nerves—e.g., Ball's operation—I have never seen a good final result.

Finally, in treating pruritus, always follow the sound line of very thoroughly searching for the cause, and never forget that you may find an acarus in the most unlikely patient.

# SPECIAL ARTICLES

## MEDICINE AND THE LAW

### A Coroner's Jury on Night Calls

AT a South Shields inquest last week the jury added to its verdict a rider charging a medical practitioner with neglect because, when summoned to visit a patient at 3 o'clock in the morning, he had not attended to the case at once. A young man whose parents were discouraging his intention of marriage took a dose of prussic acid. His mother found him lying on the floor at 3 A.M.; she told her husband, who sent her to fetch Dr. A. She said she rang the doctor's night-bell three times. When he came to the door, she begged him to come at once as her son was very ill. According to her account, the doctor said the son was not one of his patients and asked for his fee of five shillings. She went back to her husband and got the money and then returned to Dr. A and also went to the surgery of Dr. B, the family's doctor, who did not live at his surgery. Dr. B's locum tenens, telephoned for from the surgery, arrived at the house soon afterwards; Dr. A himself arrived a few minutes later. The mother complained that, if Dr. A had come when first summoned, her son would still have been alive. Dr. A explained at the inquest that the mother had said nothing about poison. He had told her that she was not a patient of his and that he should expect a fee for coming out at that time of night. She turned as if to go away and, thinking that his services were not required, he went to bed. The coroner said that Dr. A was acting in accordance with the law even if he declined to go out; perhaps the mother was hysterical and did not express herself clearly. If her statement were taken at its worst, added the coroner, it meant no more than that Dr. A stipulated for his usual fee for a night call. Doctors as a rule were generous and did what they could; but they were sometimes called out by hysterical people on a wild goose chase and were not always paid for their kindness.

The jury was evidently impressed by the mother's account. Her anxiety was natural. It is also natural that even a doctor should sometimes want a night in bed. In fact, as the coroner remarked, there was something to be said on both sides.

### Ambulance Payments in Default

An ambulance service in every district is nowadays an obvious necessity; there are districts, however, which are neither so rich nor so large as to be able to institute and maintain facilities on the metropolitan scale. Thus at a recent meeting of the Ringwood and Fordingbridge rural district council the chairman reported that the existing arrangements were financed by fees paid by persons picked up and taken to hospital, but that the fees were not being paid and therefore the service was in danger of being terminated. Some years ago, it appeared, a local resident provided an ambulance for accident cases; the arrangement was a financial loss and he had to abandon it. In 1931, after several bad traffic accidents, he was persuaded by the district council to start the ambulance again on payment of a subvention of £30 a year. This sum was meant to cover the cost of maintenance, insurance, licence, &c.; in consideration of this payment, he undertook always to have a man ready to drive the ambulance. It was intended that patients should pay for being conveyed to hospital and the charge of 25s. was deemed suitable. Unfortunately these fees, due from individuals, were now about £30 in arrears. If the ambulance-owner was unable to collect his fees, he would cease to provide the service. If the district council had to take over the service, a proper vehicle would have to be bought and the wages of at least two trained men would have to be paid. This would amount to something like £500 a year. Apparently the police, being often the first persons on the scene of an accident, usually sent the message to secure the attendance of the ambulance. This easily created the impression that it was a gratuitous service entirely paid for from public funds. There were, said the chairman of the council, many people who thought it quite right not to pay what they owed to the Government or a public authority, but here it was a private person who was being kept out of his money. The defaults in fees due to medical practitioners for services to the victims of traffic accidents afford a parallel.

## FOURTH INTERNATIONAL CONGRESS OF EXPERIMENTAL CYTOLOGY

THE fourth International Congress of Experimental Cytology was held at Copenhagen on August 10th–15th under the presidency of Prof. T. Huzella, Dr. Albert Fischer acting as local president.

The term "experimental cytology" is always very widely interpreted at this congress, and at the Copenhagen meeting an enormous range of subjects was covered. Two sessions were devoted to the physical chemistry of the cell, one to histo-chemistry, one to cell respiration and cell metabolism, and four to experimental morphology.

The last two sessions dealt with matters of medical interest—namely, the experimental pathology of the cell and the effect of radiation upon the cell. Among these papers may be mentioned that of J. Furth and J. S. Butterworth on the incidence and characteristics of neoplastic diseases among mice exposed to X rays. They showed that myelosis and lymphomatosis occurred among X rayed mice, and in two cases of myelosis the disease was transmissible to normal mice through many passages; its transmissibility depended on the presence of living immature myeloid cells. It was emphasised that a conspicuous increase of neoplasms occurred only in those organs known to be highly susceptible to X rays. H. Okkels and R. Overgaard described the effect of heating normal tissues and tissues of tumours with high-frequency currents; an immediate and profound capillary and endothelial reaction resulted from the treatment, and was particularly violent in the case of sarcomata, where regenerative phenomena did not seem to occur.

An important feature of the congress was the exhibition of the Carrel-Lindbergh perfusion apparatus in operation, which was personally demonstrated by Alexis Carrel and Colonel Lindbergh. The former also exhibited a number of lantern slides showing photomicrographs of histological sections of organs grown in the apparatus for different periods. When these were compared with similar slides of control organs, remarkably little histological difference could be detected between the normal and explanted tissue.

One evening was set apart for the exhibition of cinema films which showed a higher average standard than at any of the previous congresses. Films, demonstrating tissue cultures of gliomata and cells

infected by psittacosis virus, were exhibited by John Bland who had collaborated with the late Ronald Canti in making the films.

The beautiful laboratories of Copenhagen University, which are among the most modern and best equipped in Europe, provided ideal accommodation for the meetings. Members of the congress will long and gratefully remember the generous hospitality which they received in Denmark.

## SCOTLAND

(FROM OUR OWN CORRESPONDENT)

### THE HYPOTHALAMUS

LAST week in Edinburgh, under the auspices of the William Ramsay Henderson Trust, the first two of four lectures on the hypothalamus were delivered. Prof. J. C. Brash presided, and Prof. Le Gros Clark, F.R.S., spoke on the morphological aspects of the hypothalamus. He pointed out that this important part of the brain weighs only 4 grammes in the human, and consists largely of grey matter. Though knowledge regarding its functions is limited, its importance is indicated by the observations that disturbances of its function result in abnormalities of the vasomotor and visceromotor systems of the body, of the sleep mechanism, and of carbohydrate and water metabolism. The hypothalamus is developed in all the vertebrate series. In the higher forms its size becomes smaller in relation to the size of the brain as a whole, but its structure becomes more complicated and more differentiated. The hypothalamus is developed in relation to the medial forebrain bundle and the pituitary gland is partly developed from it. The hypothalamus and the pituitary together constitute one complex neuro-glandular structure. They have the same developmental origin and are closely linked in their vascular structure. The hypothalamus may be divided into three main parts: the pars supra-optica, the pars tuberalis, and the pars mamillaris. Lying between the last two is the posterior hypothalamic body. The pars supra-optica contains the paraventricular nucleus and the supra-optic nucleus. The supra-optic nucleus has a definite relationship to the pituitary, a tract of fibres passing from it to that gland and a small local lesion in this tract can be responsible for diabetes insipidus. The paraventricular and supra-optic nuclei are very vascular: this is possibly related to the secretory activity of the nerve-cells of these nuclei. Drops of colloid material have been observed in these cells. The pituitary has a portal circulation of its own, for, from the sinusoids of the pituitary, veins pass up the infundibulum to break up again in the hypothalamus into capillaries. Secretion from the pituitary may pass up these veins to control hypothalamic cells. The tuber cinereum contains the nuclei tuberis which may be concerned with the temperature-regulating mechanism. The posterior hypothalamic area is regarded as the main efferent mechanism of the hypothalamus. It gives origin to a tract which passes along the floor of the fourth ventricle and which has been traced to the motor nuclei in the brain stem. It is through this periventricular system that the hypothalamus is believed to control the lower motor neurones and the sympathetic neurones of the brain stem and spinal cord. The functions of the mamillary bodies are obscure, but the study of certain cases of encephalitis and the results of experimental injury to the mamillary bodies suggest that they are concerned with the mechanism which controls sleep. Finally the lecturer pointed out that the prefrontal area is connected directly with the hypothalamus by a tract through which visceral and emotional reactions may be controlled.

The second lecture on the functional aspects of hypothalamus was given by Dr. John Beattie, who pointed out that constancy of its internal environment is essential for the proper functioning of the body. He adopted as the text of his lecture: "We are here to examine the truth of the statement that the physiology of the hypothalamus is the physiology of the environment." The influence of the hypothalamus on the reactions of the body to cold were first considered: the effect of shivering, respiration, metabolism, the heart and circulation, the pilomotor system, and the urine. After discussing the evidence for and against the hypothalamic control of these bodily reactions, Dr. Beattie concluded that, while the shivering reaction could not be caused by the hypothalamus, the respiratory responses to cold were probably controlled by this region of the brain. The rise of blood-sugar associated with cold failed to occur experimentally when the posterior part of the hypothalamus is destroyed. The hypothalamus may produce a rise in the blood-sugar either by activating the suprarenals or by stimulation of the sympathetic nerves to the liver. It has been suggested that the pituitary can, under the influence of the hypothalamus, produce a diabetogenic precursor. The rise in the pulse-rate and blood pressure in response to cold is also probably a hypothalamic response. Erection of hairs following exposure to cold is abolished if the hypothalamus is destroyed. The high concentration of chlorides in the urine during the period of low body temperature is also abolished when the infundibular region of the hypothalamus is destroyed. There is, therefore, in most of the reactions resulting from exposure to cold, direct or indirect influence by the hypothalamus. Dr. Beattie discussed also the influence of the hypothalamus on the reactions of the body to heat. The thermo-sensitive zone of the brain is not the hypothalamus, but stimulation of this area produces vasodilatation. The centre controlling sweat secretion is also in this situation. The close connexions between the pituitary and the hypothalamus were then considered, also the nature of diabetes insipidus. It seems likely that an antidiuretic principle is elaborated in the pituitary gland and is activated in the tubero-mamillary region of the hypothalamus. There are evidently in the hypothalamic region two mechanisms which produce their effect peripherally through the sympathetic and the parasympathetic systems, and their common function is the maintenance of the internal environment at its optimum level.

### ROYAL MEDICAL SOCIETY BICENTENARY

The 200th session of the Royal Medical Society of Edinburgh was inaugurated last Friday by Lord Horder. Dr. A. N. McFarlan, the senior president, referred to the bicentenary endowment fund and expressed the hope that it would suffice to ensure the preservation of the library and rooms of the Society in a state worthy of its traditions. Lord Horder spoke first of some of the great figures in medicine whose names were on the roll of the Society, which is the oldest association of students of medicine in Great Britain, and proceeded to discuss the relation of the doctor to the happiness of the people. He maintained that there is a collective state of mental well-being something akin to what the financiers called "confidence," and that the doctor

was an important factor in the preservation of the public happiness. The recognition of the psychological factor in the patient's disease was nothing new, was indeed as old as Hippocrates. The introduction of psychology as one of the compulsory subjects in the medical curriculum was long overdue. No one would contest the proposition that anxiety states caused many diseases, both organic and functional; the doctor must, therefore, interest himself in the patient's happiness and must give the best guidance he can to ensure and maintain it. Lord Horder visualised the Ministry of Health as the ministry of public happiness whose concern would include the treatment, perhaps, of the political hyperpyrexia of recent days. It was of paramount importance that doctors should be detached from the general clamour of the left and of the right. We must continue to merit and enjoy the public's confidence. There was a need for proper feeding and housing, leisure for play, noise control, and for the giving to each human being a chance before he is born. While agreeing that physical training is required in order to raise the level of physical fitness of the nation, he deplored the tendency to uniforms and parades. We should try to secure physical fitness and happiness for the people of this country in order that they shall preserve their mental poise when large sections of humanity are losing it. This mental poise, if only it can be kept, will yet save civilisation.

The vote of thanks accorded to Lord Horder on the motion of Mr. Henry Wade, president of the Royal College of Surgeons of Edinburgh, was seconded by Dr. H. M. Adam.

## IRELAND

(FROM OUR OWN CORRESPONDENT)

### USE IN ADVERTISEMENT OF THE WORD "SURGERY"

A PROSECUTION under the Medical Practitioners Act, 1927—the first, it would appear, to be brought under the Act—came before the High Court of the Irish Free State last week, by way of a case stated. The Attorney-General, according to a report in the *Irish Press* of Oct. 15th, had brought a summons against Harold C. Moscow, trading as Maxton Saunders and George Prescott and Sons, 13, Merrionrow, Dublin, arising out of an advertisement in the *Southern Star* newspaper announcing a visit by the defendant to Skibbereen, and stating that "his surgery in Cork is the mecca of sufferers of defective sight." On behalf of the Attorney-General it was submitted that the use of the word "surgery" amounted to implying that the defendant was a registered surgeon. It was urged that there could be no difference between a person who said, "I have a surgery," and one who said, "I am a surgeon." The defence argued that the section of the Act referred only to descriptions of persons and not of places. The district justice dismissed the summons but stated a case for the decision of the High Court. The case was heard last week by Mr. Justice Sullivan and Mr. Justice O'Byrne, and the decision of the district justice upheld. Mr. Justice Sullivan stated that it would have been open to the prosecution to charge the defendant with an offence under another portion of the section—namely, that he falsely and wilfully represented himself to be a person who was registered in the Medical Register. Mr. Justice O'Byrne said that in so far as it was held by the district justice that the offence as charged was not proved he was of opinion that the district justice was right. He could not, however, agree that the section could not be held to apply to the application of misleading names to a premises. He thought that the Court's answer to the appeal should be qualified by the use of the words, "Having regard to the way in which the prosecution was framed," so as to make it clear that the Court was not deciding that a person could not be convicted under the section for the terms by which he described his place of business.

### ROYAL COLLEGE OF PHYSICIANS OF IRELAND

The annual dinner of the president and fellows of the Royal College of Physicians of Ireland was held in the College Hall on Oct. 17th, being the eve of St. Luke's Day. Dr. J. A. Matson, the president, was in the chair, and a company of some 70 fellows and guests were present. Among the distinguished guests were the Lord Mayor of Dublin, the president of the Royal College of Surgeons in Ireland, the governor of the Bank of Ireland, the president of the Incorporated Law Society, and the president of the Royal Society of Architects of Ireland. Greetings were received from Lord Dawson of Penn on behalf of the Royal College of Physicians of London.

## BUCHAREST

(FROM OUR OWN CORRESPONDENT)

### REGULATION OF THE INLAND MANUFACTURING CHEMISTS

OWING to the currency restriction law, importers of foreign drugs obtain the necessary currencies to pay for these from the National Bank at the quotation price, plus 44 per cent. to make up for the difference between the official quotation and the rate of exchange of foreign currencies. The price of all imported drugs has been raised by about 50 per cent. This procedure has been exploited also by the local manufacturing chemists, who likewise raised their prices by the same amount, arguing that the raw materials which they use in manufacture became dearer by 44 per cent. The government have protested, being well aware that manufacturers import at most only a fifth of the drugs they use, the rest being obtainable in the country. An order has therefore been issued reducing prices to their former level, offenders being rigorously prosecuted. In any case, drugs have never before been as costly as they are now, so that a medical prescription is regarded at present as a luxury which only the well-to-do can afford. It is an everyday occurrence for a physician who visits a patient and asks if he takes his medicine regularly to be told: "I am very sorry but I have not had it made because the chemist charged (say) 200 lei for it" (200 lei is the price of 25 lb. of best grade beef). Some patients who may have the 100 lei for the doctor's fee, do not consult him because they have not the other 100 lei for the medicine. In such circumstance quacks flourish, the greatest being some of the pharmacists themselves.

### MEDICAL PRACTICE IN ALBANIA

In the post-war years public health in general and the standard of the competency of physicians in particular has advanced a great deal in Albania. The State is granting a large number of scholarships for medical students to study abroad, so that the returning physicians introduce western ideas. The latest achievement is a new bill, which lays down rules and regulations about medical practice and

establishes a medical chamber. Hitherto quacks and magicians could practise to their hearts' content, but the new law will apply very strict measures against them. Foreign physicians may now practise in Albania only with the government's permission. Because the country is sufficiently supplied with its own doctors, this is given only in exceptional cases.

### REDUCTION IN THE COST OF WATER

In the town of Oradea (population 100,000) the city magistrate raised the price of water by regulation and caused the population to economise in its use. Thereupon the council of the Medical Chamber energetically protested against any measure that might lead to the decrease of water consumption. Water, they said, is a highly important commodity, and to promote its accessibility is an elementary human and civilian duty, just as it is with fresh air. Causing it to become dearer for technical or commercial reasons may lead to incalculable and far-reaching harm. The council detailed the probable consequences of economising with water by reducing the quantity of water available for washing, laundry work, and cleanliness. They also protested against the system of reckoning the quantity of water according to the number of rooms: this, they say, is antisocial, unjust, and unhygienic. They established the fact that, taking as a basis the number of rooms for families living in lodgings with one or two rooms, the minimum of 30 gallons of water a day will not be secured, and public hygiene is thus greatly endangered. Another objection was made to a paragraph in the regulations, by which the water-supply can be stopped for varying periods as a punishment for non-payment of rates. Upon this intervention the municipal council passed the memorandum of the Medical Chamber to the city medical officers of health, after whose verdict the regulation has been cancelled.

## GRAINS AND SCRUPLES

*Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index.*

### FROM A DEPARTMENTAL DOCTOR

### IV

A FEW years ago the present writer was asked to give an address on general practice, or the doctor's life, or some such topic, to a society of medical undergraduates at Oxford. It was a delightfully pleasant and informal occasion, fortified by tankards of beer, and the meeting eventually broke up into a series of miniature viva voces. Which was the best hospital to go to for medical or surgical teaching? Where were the best prospects of ultimately being made a house surgeon or resident accoucheur? Did London or the provinces offer the better opportunities for the consultant of the future? But one hitherto unknown undergraduate, taking advantage of a quiet moment, propounded the embarrassing question as to whether he should become engaged to be married. He could not afford, he explained, to be married before he was qualified and in practice; and that would not happen, at the earliest, for another four or five years. It was an unexpected and seemed, at the time, a rather naïve and even absurd question. But was it not after all—provided it had been put to somebody better informed—not only a reasonable but extremely cogent one? Is not a doctor's wife—even professionally speaking—at least as important as himself? And that being so, would not there be much to be said for a relatively long engagement?

* * *

Wisdom would reply, of course, that it all depends. And so, no doubt, it does. But at least it must be admitted that a girl who thinks of marrying a doctor ought to be particularly sure both of herself and him. She will, in most cases, be marrying a man much of whose professional work will be done at home; and she will be living in a house that, less than that of any other woman, she will be able to call her own. It is true that some of its rooms will be nominally private. But in fact they will only be extensions of the waiting-room and surgery. Even with the ablest of private secretaries—and not many doctors can employ such in their earlier days—they will be invaded by telephone calls, if not by actual clients. She will also be assumed, in the absence of her husband, to be herself the possessor of medical knowledge; and if she should have children, she will inevitably be regarded as a local authority on children's upbringing. She will also be marrying a man who, on the most critical social occasions, may be obliged to forsake her, and who is liable to be called out, and whose maledictions she may be awakened to hear, at any hour of the night. She must further be ready to hear her tea-parties and dinner-parties described as propaganda for the practice; and so, indeed, they will be if they are charming and not given for that purpose. And she must be the soul of discretion on those and all other occasions.

* * *

So important, in fact, are doctors' wives, and the tasks of many of them have been so harassing, that history's tribute to them as a class has been strangely meagre. All that we know of Harvey's Elizabeth, apart from the fact that she was the daughter of a royal physician, is that she bore him no children, was kind to the poor, had a favourite parrot, and inherited a hundred pounds from one of her husband's brothers. Even her grave is unknown. But, since Harvey's merchant brothers adored their Will, John's little legacy may be taken as some proof that she had made him happy. Scarcely more has been recorded about Sydenham's Mary, whom he married at Wynford Eagle, still one of the loveliest of Dorsetshire farmsteads. But she bore him three sons, and doubtless no news may be taken as good news. Hans Sloane, as was perhaps consonant with the first medical baronet and architect of one of the largest fortunes ever amassed by a doctor, married—not too early—a wealthy widow, a few years older than himself. But Hans was a good-natured and placid person, already well up the ladder of success; and if little is known, or to be found in his vast correspondence, about his Elizabeth, she lived long enough to see their two daughters admirably and suitably married, the one to George Stanley of Paultons, and the other to Lord Cadogan. Far less easy, probably, was the lot of John Hunter's Anne, wooed when she was a girl, and apparently, after eight years' waiting, rather off-handedly married. "Dear Brother," he wrote to William, "To-morrow morning at eight o'clock and at St. James's Church I enter into the Holy State of Matrimony. As that

is a ceremony which you are not particularly fond of, I will not make a point of having your company there. I propose going out of Town for a few days; when I come to Town I will call upon you. Married or not married, ever yours." But Anne was pretty and sociable, well-liked in the circle of the Thrales and Dr. Johnson, and a writer of amiable verses. One of her songs, indeed, "My Mother Bids me Bind my Hair," must have introduced her to thousands of homes where her illustrious husband was quite unknown; and although he disliked her parties, which he described as "kick-ups," she always remained his Anny, affectionately alluded to in his letters, and seems to have played her difficult part with unruffled loyalty. Hardly less exigent, too, must have been the demands of James Simpson on his Jessie, married for love but also abruptly, in the end, because Jamie deemed this necessary for his career. He was 28 at the time and still in debt, though his practice was beginning to grow, and he had just applied for, but not yet obtained, the university professorship in midwifery. He had in fact so plastered Edinburgh with canvassing letters that the senior element in the university had reacted rather vehemently from this tornado-like baker's son. But Jamie believed in his star, decided meanwhile to forearm himself against the possibly handicapping charge of celibacy, and six weeks after his wedding was able to tell his wife that he had been elected by one vote. On the following day he took her for a honeymoon. Three years later they were out of debt; and in another ten he was immersed in a practice said to bring £80,000 a year to the Edinburgh hotels. Indeed, the hotels were often so full that sick ladies were occupying all Jessie's spare bedrooms; and Jamie's impetuous hospitality—he once announced at luncheon that he had invited the whole of his class to a dinner and dance that same evening—must have given her plenty to do.

* * *

But perhaps Jenner, in his blue coat, yellow buttons, and shining jockey-boots, riding through his Gloucestershire lanes, was the most similar of all these to a general practitioner; and his Catherine Kingscote, though not very strong, seems to have been the model of a general practitioner's wife. Over their Berkeley home, to which he returned from his rounds and diversions—his little medical dinners at Rodborough and Alveston and the houses of his friends—she seems to have presided like a restful angel. And he once missed a birthday party, the greatest tribute he could have paid her, because she happened to be unwell. It was reported of her, when at last they were parted, that she was "consistently loving and tranquil"; and this, if it had been thought of, might have suggested a reply to the Oxford undergraduate. "Yes," might have been the answer, "if the lady of your devotion is both loving and tranquil."

# PANEL AND CONTRACT PRACTICE

## Extension of Service

THE three national associations of insurance committees have all met within the past few weeks. At the Welsh meeting Dr. H. G. Dain after reviewing the existing conditions affecting the profession under the Insurance Acts had a look into the future. He felt it impossible to imagine staying indefinitely in the position existing to-day. Some day public opinion, and then a government, would want to make the service more complete and to link it up with other medical services. But, he said, I see no reason why the medical services should not proceed by development with the present machinery; any linking up could readily be provided. Dr. Dain would obtain the necessary money by increased contributions, rather than through taxes. He would make a start with the provision of consultants and specialists giving them the necessary pathological and X ray facilities. Hospital care was being increasingly provided by means of contributory associations and through council hospitals. Doctors, he thought, would like to see all treatment—whether medical benefit, specialist services, ophthalmic, or dental benefit—made statutory benefits under the Act, and available equally to all insured persons. Favourable sickness experience and economical management could then be reflected in more generous provision for sickness, disablement, and maternity.

## Gap on Leaving School

Turning to the extension of medical benefit to other groups of persons, Dr. Dain suggested making a start with workers between school leaving age and 16 years. Here Dr. Dain was certainly prophetic, for, at the meeting of the English association last week Sir Kingsley Wood, after remarking that the Government had already announced their intention to see this gap filled, went on to anticipate that the programme for the coming session would include a Bill to deal with this problem. Proposals for improving the health services must, the Minister said, be considered not only with regard to their cost, but in the order of priority in relation to other desirable improvements. Dr. Dain had a good word for insurance committees and regarded their success in dealing with difficult medical questions as being largely due to the fact that the committees had been advised by practitioners actually doing the work, rather than by a special medical officer of their own. He was opposed to the suggestion that medical benefit should be administered by local authorities. If, as he hoped, they were satisfied that the best method of rendering medical service to individuals is that which allows free choice, and allows the patient a direct voice in the management of the service, then let them say so early and often, not waiting until a scheme had been developed in which these things might not be provided.

## "Medicine" Complex in Scotland

At the Scottish conference Miss Muriel Ritson, controller of insurance for Scotland, dealing with the evergreen prescribing problem, said that there were unfortunately certain medical practices and certain areas in Scotland where there were signs that the insured population was acquiring a "medicine" complex, while practitioners did not always seem to be prepared to deal with the evil. The cloud on the horizon was as yet no larger than a man's hand, but if it grew it meant not only the encouragement of morbidity and neurosis in the patient, but the degradation of the practice of medicine. This was, she said, one aspect of the nation's "drink" problem, and Scotland must not lose her well-earned distinction of being a sensible and sober nation. The department of health would again appeal to insurance and panel committees to maintain the prestige of the nation.

# PUBLIC HEALTH

## Boarding-out in Scotland

FOR eighty years or more it has been the policy of the Scottish Board of Control to board out quiet chronic patients who do not require elaborate institutional care but are not mentally capable of full responsibility. Last year for instance there were 1190 mental patients and 1440 mental defectives outside institutions, the numbers inside being respectively 15,687 and 2974. It is the chief duty of the deputy commissioner of the Scottish Board to visit patients under guardianship, and this work has recently been described (Medical Women's Federation Quarterly Review, October, 1936, p. 42) by Dr. Kate Fraser, a commissioner of the Board. Up to the passing of the Act of 1913 many of the patients boarded out were imbeciles, but after 1913 it was found, rather to the Board's surprise, that the difficult high-grade defective could often be boarded out, especially after a period of training in a special school. Defectives and mental patients are not boarded in the same house. In the large cities the patients are generally in groups, but elsewhere many of them are scattered singly or in groups of two, three, or four, never more, in private houses. For the male psychotic and defective a croft or a small farm is generally chosen. For women in the Highlands it is generally the village, and in some of these villages two or three women patients, some of them elderly, may be found in practically every other house. The defective girl must needs be banished to a more or less isolated country cottage or to a small croft where a woman is in charge. A difficulty is that she does not get the same outlet for her energies as the boy in the fields. Many male patients have shown their mettle in large dairy farms in Ayrshire and Stirling, but the defective boy is not put to associate with hired hands. Recently the Islands of Mull, Islay, and Arran have been increasingly used for higher grade defective boys, especially those who have got into the hands of the police.

The selection of guardians requires much care. There is no age-limit in Scotland for guardianship; several of the guardians are over 80. Various reasons induce people to become guardians: it may be to get help on the farm or croft; it may be for the money, though this averages only 13*s.* 5*d.* a week; sometimes it is for companionship. It seems that guardianship is becoming in Scotland an hereditary craft. Some of the boarded-out patients have been 30, 40, 50, and even 60 years under guardianship in some houses, and handed down from the care of father to that of son or daughter or even grandson or granddaughter. These hereditary guardians are almost invariably good guardians, for in practice, whatever the reason for taking on the duties, the guardian almost invariably becomes attached to the patients. Dr. Fraser remarks how often the guardian pleads for just "one more chance" for a troublesome charge, and this last chance is often successful. Male patients must have separate beds, but women often prefer to sleep in the same bed as their guardians. Guardians must provide their patients with the same kind of food as they have themselves, and it is taken at the same table unless for any special reason. At first indeed many patients are inclined to overeat, and Highland hospitality rather encourages this. Recently the question of leisure occupation is becoming more and more important and is always discussed by the commissioner with the guardian. During the last general election, Dr. Fraser remarks, one guardian took his two high-grade defective boys to political meetings.

This pioneer work in Scotland, along with some rather startling examples of intensive boarding-out in Holland, have led to the increasing use of the method in this country, partly to save the further enlargement of institutions for the mentally defective, and partly owing to recognition of its value as a means of socialisation. It is for instance the experience of the Guardianship Society, which advises many local authorities in the southern home counties, that a large number of defectives of all grades are happier in private houses than in institutions. Isolation is more difficult to obtain in communities more urbanised than the Highlands of Scotland, and in practice it is not found necessary —or even desirable—to find the isolated country cottage or farm, where from their very isolation effective supervision of the home conditions is less easy to ensure. It is one of the objects of guardianship to make these patients feel that they are members of the general community, and too much isolation is likely to defeat the attempt at resocialisation. Banishment of delinquent boys to island communities too may be good up to a point, but what is needed most is to alter the outlook on life while their minds are still plastic. Some of them should be capable of returning to the life of the community after careful but sheltered training.

## Leave for Service in Spain

A doctor employed in a municipal hospital in Birmingham applied for six weeks' leave of absence without pay in order to serve with a medical unit in Spain. The city's medical officer of health took the view that the applicant was one of three senior officers in a hospital which was hard pressed and that the work of the institution could not be fully maintained if he were allowed to go. The public health committee endorsed this view and refused the application. The general purposes committee agreed; if the applicant were given leave of absence without pay, it would mean either that his post was unnecessary or that he would have to be replaced; he had been engaged for a specific purpose and there might be difficulty in obtaining a locum tenens of the same standard of ability. In the city council on Oct. 13th the decision was challenged by the moving of an amendment to the report of the general purposes committee. The amendment took the form of a declaration that the council, being sympathetic to the relief of pain and suffering arising out of the civil war in Spain, was willing to grant reasonable leave of absence without pay to any employee of the corporation who desired to undertake ambulance or medical service, "provided such absence can be arranged by the department concerned." The amendment added an instruction to the appropriate committees of the council to consider the desirability of issuing regulations for this purpose to the various departments of the corporation. In the debate which followed it was suggested on the one side that any medical man in the employ of a large corporation like Birmingham should have the opportunity to give service in the cause of humanity. It appeared that the doctor had on some earlier occasion been given six weeks' absence for purposes of study. Speakers argued that he could evidently be spared and that anyhow there was no finer training to be obtained

than in an ambulance unit; the whole organisation of the city's health services would not crash in ruins if one of the doctors had six weeks' leave. Somebody mentioned that the applicant wanted leave to go to Madrid, and the inference seems to have been drawn that the refusal to let him go was inspired by dislike of the Spanish Government's politics. The debate ended in the defeat of the amendment by the narrow margin of 52 votes to 48, 9 councillors remaining neutral.

As the proposal contemplated absence without pay, no indignant ratepayer could presumably have complained if leave had been granted; there would have been no additional expenditure wherein a district auditor could find material for a surcharge. During the recent legal vacation questions have been raised whether a trade union was entitled to send financial assistance to relieve distress in Spain. These questions remain to be answered. Meanwhile, whether or not the Birmingham debate was a skirmish between interventionists and isolationists, the public health committee has carried the day with its prosaic insistence that a doctor in a municipal hospital signs on for service on the home front.

## INFECTIOUS DISEASE

### IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 10TH, 1936

*Notifications.*—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1996; diphtheria, 1278; enteric fever, 51; pneumonia (primary or influenzal), 571; puerperal fever, 35; puerperal pyrexia, 108; cerebro-spinal fever, 8; acute poliomyelitis, 20; acute polio-encephalitis, 2; encephalitis lethargica, 8; dysentery, 31; ophthalmia neonatorum, 82. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals for the London County Council on Oct. 16th was 2816, which included: Scarlet fever, 1021; diphtheria, 840; measles, 55; whooping-cough, 342; puerperal fever, 16 mothers (plus 7 babies); encephalitis lethargica, 285; poliomyelitis, 3. At St. Margaret's Hospital there were 10 babies (plus 6 mothers) with ophthalmia neonatorum.

*Deaths.*—In 122 great towns, including London, there was no death from small-pox or scarlet fever, 6 (1) from enteric fever, 3 (0) from measles, 12 (2) from whooping-cough, 32 (8) from diphtheria, 71 (19) from diarrhœa and enteritis under two years, and 21 (4) from influenza. The figures in parentheses are those for London itself.

The deaths from enteric fever outside London occurred at Mitcham, Newcastle-upon-Tyne, Nottingham, Plymouth, and Poole. The deaths from measles were reported from Newcastle-under-Lyme 2, Stoke-on-Trent 1. Deaths from diphtheria were reported from 17 great towns, Manchester, Sheffield, and Birmingham each 3.

The number of stillbirths notified during the week was 252 (corresponding to a rate of 39 per 1000 total births), including 40 in London.

# THE SERVICES

## ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. R. K. Shaw, M.C., to *Defiance*; A. G. Bee to *Devonshire*; and R. A. Brown to *Victory* for R.N.B.

Surg. Lt.-Comdr. D. Duncan to rank of Surg. Comdr.

Surg. Lt.-Comdr. (D) A. W. Wallace to *Pembroke* for R.N.B.

Surg. Lts. H. J. Bennett to *Leith*; and G. A. Maxwell Smith to *Devonshire* (on recommg.).

N. M. McArthur entered as Surg. Lt. for short service and apptd. to *Victory* for R.N. Hosp. for course of instruction.

### ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdr. (D) E. D. Collins to *Pembroke*.

Surg. Lt. (D) C. E. Brittan promoted to Surg. Lt.-Comdr. (D).

Surg. Sub-Lt. S. E. Cooke to be Surg. Lt.

## ARMY MEDICAL SERVICES

Col. F. C. Sampson, D.S.O., late R.A.M.C., having attained the age for retirement, is placed on ret. pay.

Lt.-Col. A. G. Wells, D.S.O., from R.A.M.C., to be Col.

Col. Alan G. Wells qualified in 1908 from St. Mary's Hospital, and immediately joined the R.A.M.C., becoming Capt. in 1911, and was stationed at Kasauli, Punjab. He was in the European War in France, Belgium, and Italy, was mentioned in dispatches four times, received the 1914 Star, the D.S.O. in 1917, and two medals. He is 54.

## ROYAL ARMY MEDICAL CORPS

Maj. A. E. S. Pringle-Pattison to be Lt.-Col.

Capt. F. McL. Richardson to be Maj. (provisional).

Lt.-Col. and Bt. Col. R. C. Priest, K.H.P., R.A.M.C., to be Temp. Col. whilst empld. as Consulting Physician to the Mil. Forces in Palestine and Egypt.

Lt.-Col. S. W. Kyle, R.A.M.C., to be Temp. Col. whilst empld. as A.D.M.S., 5th Div.

Maj. A. G. Harsant, O.B.E., R.A.M.C., to be Temp. Col. whilst empld. as Consulting Surgeon to the Mil. Forces in Palestine and Egypt.

### REGULAR ARMY RESERVE OF OFFICERS

Col. J. Mackenzie (late R.A.M.C.), having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

### TERRITORIAL ARMY

Capts. to be Majs.: C. E. Fenton, F. J. L. Lang, and J. G. Morgan.

### TERRITORIAL ARMY RESERVE OF OFFICERS

*Army Dental Corps.*—F. G. B. Wilson to be Lt.

## ROYAL AIR FORCE

Flight Lts. promoted to the rank of Squadron Leader: T. W. Wilson and G. W. Paton.

Squadron Leader H. McW. Daniel is placed on the retired list at his own request.

Flight Lt. C. H. Smith is transferred to the reserve, class D.

Flight Lt. G. H. J. Williams to No. 3 Flying Training School, Grantham.

Flying Offr. R. A. Cumming is promoted to the rank of Flight Lt.

## INDIAN MEDICAL SERVICE

Lts. (on prob.) to be Capts. (on prob.): T. P. Mulcahy and R. J. Henderson.

Lt. E. H. Wallace is restd. to the estabt.

*Indian Medical Department.*—Asst. Surg. (1st Class) Horace Mullins to be Lt. (Sen. Asst. Surg.). Maj. (Sen. Asst. Surg.) T. J. Stuart retires.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Post-graduate courses to be given during November and December: medicine, surgery, and gynæcology at the Royal Waterloo Hospital (Nov. 2nd to 14th); urology at St. Peter's Hospital (Nov. 2nd to 14th); dermatology at St. John's Hospital (Nov. 2nd to 26th); venereal disease at the London Lock Hospital (Nov. 23rd to Dec. 19th); proctology at St. Mark's Hospital (Nov. 30th to Dec. 5th); thoracic surgery at the Brompton Hospital (Dec. 7th to 12th); dermatology at the Blackfriars Skin Hospital (Dec. 7th to 19th). A clinical and pathological M.R.C.P. course will be held at the National Temperance Hospital at 8 P.M., on Tuesdays and Thursdays from Nov. 24th to Dec. 10th; M.R.C.P. courses have also been arranged in chest diseases at the Brompton Hospital (Dec. 7th to Jan. 8th); in diseases of the chest and heart at the City of London Hospital, Victoria Park (Wednesdays and Fridays, 6 P.M., Dec. 9th to Jan. 8th); in endocrinology at the National Temperance Hospital (Monday, Nov. 23rd, and Wednesdays and Fridays, from Nov. 25th to Dec. 10th).

Week-end courses in physical medicine at the St. John Clinic and Institute of Physical Medicine (Nov. 7th and 8th); in general surgery at the Princess Beatrice Hospital (Nov. 14th and 15th); in infants' diseases at the Infants Hospital (Nov. 21st and 22nd); and in chest diseases at the Brompton Hospital (Nov. 28th and 29th). Detailed syllabuses of all courses can be obtained from the secretary of the fellowship, 1, Wimpole-street, W.1.

# CORRESPONDENCE

## CHLOROFORM

*To the Editor of* THE LANCET

SIR,—The restrained letter from Dr. J. E. C. Rouse in your issue of Oct. 10th on the subject of chloroform is most timely. It is the fashion in England to decry chloroform. During my service in India, as a civil surgeon, I estimate that I had chloroform administered for me at least 13,000 times with only two deaths. Further comment seems unnecessary.

I am, Sir, yours faithfully,

T. HUNTER,
Lieut.-Colonel, I.M.S. (ret.); late Civil Surgeon, Lucknow.

Ludlow, Oct. 15th.

## FIXED DENTAL APPLIANCES

*To the Editor of* THE LANCET

SIR,—I was interested to read Dr. Bardswell's letter which supports my claim that, in favourable circumstances, fixed dental appliances can be free from the vices they have been so often accused of. In his case I understand that the teeth supporting the work were devitalised, and, this being so, it appears that even the much execrated "dead" tooth, with a little expert encouragement, can be usefully employed on occasion. It is my experience, however, that when compared with other and vital teeth in the same mouth the devitalised members may have shorter periods of existence, and I try to avoid interfering with the vitality of pulps for this reason.

But, as it is not a necessary part of the procedure now that teeth in the incisor region and elsewhere should be devitalised and excised in order to support "bridges," even the doubtful ones can feel satisfied that no new cause of apical infection can be introduced when this work is attached. This kind of restoration in most cases can be made so quickly, and with so little interference with the structure of the teeth which act as its supports, that there is small excuse for wearing a removable appliance which is apt to damage the structures it is in contact with. I am, Sir, yours faithfully,

Park-crescent, W., Oct. 16th. J. H. OLVER.

## NEPHRITIS AND THE SERUM FEVER REACTION

*To the Editor of* THE LANCET

SIR,—Sir William Willcox in his address on clinical immunity, an abridgement of which appeared in THE LANCET last week, states that "If a patient is allergic, or has any disease associated with hypersensitiveness, such as exophthalmic goitre or nephritis, dangerous symptoms may be associated with the serum fever reaction." I agree with him to the extent that there are certain forms of hypersensitiveness the subjects of which are not suitable for serum treatment. But is nephritis one of these? Your readers will remember that when the serum treatment of diphtheria was introduced 42 years ago, it was accused of being the cause of certain morbid states of the kidneys. But in my experience that was so far from being the case that I published in your columns (1896, ii., 1450) three instances of patients, the subjects of the nephritis which follows scarlet fever, who were treated with serum without ill effects. I published subsequently the notes of two similar cases (Rep. of the Clinical Society's Committee on the Antitoxin of Diphtheria, 1898, p. 36). After that date I observed several cases of the same sort; so far as post-scarlatinal nephritis is concerned there is no harm, in my experience, in administering horse serum. I remember also one case of chronic nephritis, not due to scarlet fever, in which the patient who contracted diphtheria was treated with serum without any ill effect.

I am, Sir, yours faithfully,

E. W. GOODALL.

Hemingford Abbots, Hunts, Oct. 18th.

## INFECTIONS OF FINGERS AND HAND

*To the Editor of* THE LANCET

SIR,—I have read Mr. Handfield-Jones's article and Sir David Wilkie's comments on it with great interest. There are but few engaged in the practice of surgery over a number of years who have escaped the tragic experience of the loss of a colleague or friend from streptococcal lymphangitis following a trivial injury. Whether the infection arises in the lip, or following the extraction of a tooth, or the prick of a finger, the outlook is the same. Looking back I realise that mortality was often the result of too active surgical treatment. There is no place for the knife in cases of acute lymphangitis. A minor lesion followed by red lines, rigors, and high temperature calls for conservatism. Operative surgery is contra-indicated. Handfield-Jones and Wilkie have emphasised this point. Patience and delay are the watchwords. Active measures must be left to Nature's powerful efforts at defence; conservatism on the part of the surgeon assists this activity to become effective.

By conservatism we mean, as pointed out by Wilkie, the injection of concentrated antistreptococcal serum, the light application of a Bier's bandage for three days above the infected area and heat to the limb. The injection of Prontosil as advocated by Handfield-Jones is full of promise. Personally I avoid stupes. Their application causes constant disturbance, the skin becomes soppy and a nidus for infection, the heat is transitory. Rest is essential. The limb should be splinted over copious layers of cotton-wool or encircled by an electrically heated pad. Many acute cases resolve under such management, but there are some which cause daily anxiety for many weeks. In the latter group the appearance of localised pus in the axilla or elsewhere is the first ray of hope. When localisation is manifest further delay is indicated; we should wait until the process of walling-off is complete. If the abscess opens spontaneously all will be well, if we hasten the process it should be by the mere prick of a sharp knife. No forceps should be introduced to enlarge the opening, no squeezing or milking of the abscess should be attempted. Fulminating cases seldom survive, death terminates the infection within two or three days. I have however seen many desperate cases recover when only the most conservative methods of treatment were employed and when abscess formation was patiently awaited.

It goes without saying that playing for time in anxious cases taxes the power of restraint. Time may be well employed by the giving of blood transfusions, the instalment of the glucose drip, and the employment of sunshine, artificial or real.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 19th. W. I. DE C. WHEELER.

# LONDON MEDICAL EXHIBITION

ON Monday last this exhibition opened in the new hall of the Royal Horticultural Society in Greycoat-street, Westminster, and it will remain open till 6.30 P.M. on Friday the 23rd. More than 125 firms and organisations are exhibiting, and the immense range of their preparations and their activities is evident from the following notes on some of them.

## Drugs and Pharmaceutical Preparations

(90) ALLEN AND HANBURYS LTD. (Bethnal Green, E.) had a number of new specialties to introduce as well as their tried products. They have put up a convenient tablet called Magsyn for the purpose of combining the sedative action of magnesium with the analgesic effect of aspirin. The combination enhances the analgesic effect and increases the gastric tolerance for aspirin. Cremor Alkalinus M.S. is a fine suspension of magnesium silicate for the treatment of ulcer, and Cremor Alkalinus L. is a suspension of aluminium hydroxide and of osmo-kaolin for hyperchlorhydric dyspepsia and colitis. The Sodium Mandelate Granules "Allenburys" for urinary infections have a pleasant lemon flavour and are easily soluble; they are strongly bacteriostatic in urine at a pH below 5·3. The firm also market Lysantol disinfectant; Lixen senna preparation; and Haliborange, palatable halibut oil.—(67) ANADIN LTD. (12, Chenies-street, W.C.) had on view their well-known anodyne tablets, and made no secret of their formula. They recommended it as a non-depressant, non-habit forming sedative for relief of pain of all kinds and the alleviation of colds and catarrh.—(100) THE ANGIER CHEMICAL CO., LTD. (86, Clerkenwell-road, E.C.), showed again their emulsion, which has been popular for forty years; and also Sagradol, a laxative combination of mineral oil and cascara sagrada which they recommend for constipation in pregnancy and after operation and in children.—(116) ANGLO-FRENCH DRUG CO., LTD. (11 and 12, Guilford-street, W.C.), showed a range of therapeutic preparations, particularly picking out for mention Dimol, the recognised intestinal disinfectant, in tablets, syrup, snuff, and lavage powder; Bacte-Phages, bacteriophages prepared under the control of Prof. d'Herelle; Emge (Lumiere), magnesium hyposulphite for allergic conditions; and Phospho-soda, a liver stimulant and laxative forming a useful morning saline.

(19) ANTIBODY PRODUCTS LTD. (Watford, Herts) showed their British-Bee-Venom which contains no formic acid; A.P.L. Broncho-Catarrhal Vaccine, made exclusively from first cultures from patients suffering from acute respiratory infections; Air-Borne-Dust-Proteins for asthma; and their older products Antibacsyn and Antimalignyn.—(7) ARMOUR AND CO., LTD. (Armour House, St. Martin's-le-Grand, E.C.), displayed a full range of Glanoid glandular products, including a fluid extract of liver; a highly concentrated liver liquid in ampoules for injection; a concentrated fresh calves' liver extract for oral use; a liver and yeast concentrate for boils; a liver and iron mixture; posterior pituitary ampoules; and a suprarenal cortex of high concentration.—(44, 58) BAYER PRODUCTS LTD. (Africa House, Kingsway, W.C.) showed a number of new preparations in addition to the older Salvarsan, Prolan, Prominal, and Luminal. Prontosil is their chemotherapeutic preparation for streptococcal septicæmias, tested by the Therapeutic Trials Committee of the Medical Research Council. Atebrin is their latest synthetic drug for malaria; Betaxin is a vitamin-$B_1$ preparation, chemically pure and isolated from yeast, and Cantan is a chemically pure vitamin C; Bioferol is a new nutrient tonic on the basis of hæmoglobin and liver extract; Esmodil is a new drug for the stimulation of the parasympathetic system which differs a little from acetylcholine in that it acts purely on the vagus; and Icoral is a new analeptic acting on the respiratory and vasomotor centres and toning up the peripheral circulation at the same time.—(5) BENGUE AND CO., LTD. (24, Fitzroy-street, W.1), had a large number of useful products on view, including Anaclasine, a combination of magnesium salts and twenty different peptones recommended for allergic conditions; Pernyase jelly for open suppuration; Noseptyl nasal drops; Panbial, a new nutritive tonic; Metanium, for irritating skin conditions; Iodeopirine, an electro-chemical non-toxic iodine combined with aspirin, which is said to have an activity twenty times greater than that of the acetyl salicylates; and the well-known Lipiodol, Opobyl, and Pulmo Bailly preparations.—(87) BISODOL LTD. (12, Chenies-street, W.C.) showed their antacid preparation of this name and offered clinical evidence of its value in all conditions requiring intensive alkaline medication, including pregnancy.

(37) BOOTS PURE DRUG CO., LTD. (Nottingham), displayed a range of their fine chemicals, especially pointing out those for the treatment of anæmia and syphilis, and antiseptics and organotherapeutic preparations. Pepsac, desiccated stomach, Hepastab, intramuscular liver extract, and Livron, compound liver extract with iron, have been in use for some years, and Insulin (Boots) and pituitary extract are also well known. A display card demonstrated the stages in the manufacture of insulin. A new and pleasant flavoured product is Ammoket Elixir of Ammonia Mandelate, while Neoket is a granular form of mandelic acid containing no ammonium chloride.—(140) BRITISH DRUG HOUSES LTD. (Graham-street, City-road, N.) have added a number of modern products to their well-known medical specialties, for example Anahæmin, the active hæmopoietic principle of liver obtained by the method of Dakin and West; Mandelix, elixir of ammonium mandelate, which has been found to be effective without the collateral administration of large quantities of ammonium chloride; B.D.H. Sex Hormone Preparations, including Gonan, pregnant urine hormone; Œstroform, in solution of three strengths and in tablets and pessaries; Progestin, corpus luteum hormone; and Mersalyl, the sodium salt of salicylamide-O-acetic acid, containing from 38·5 to 40·5 per cent. of non-ionisable mercury, for cardiac disorders.—(114) BURROUGHS WELLCOME AND CO. (Snow Hill-buildings, E.C.) as usual greeted visitors at the entrance with an attractive blue and white stand on which they displayed their wide range of products. They drew special attention to their ergot and digitalis products (Ergometrine, Ergotoxine Ethanesulphonate, Ernutin, Digoxin, and Diginutin); to the new Stypven Russell Viper Venom, issued in rubber-stoppered bottles together with hermetically sealed ampoules of solvent; Eulykol, representing a recent effort to reduce the pain and local reaction accompanying injection of hydnocarpus oil; vaccines and serological products of all kinds, including a gas-gangrene antitoxin advocated for acute intestinal obstruction; and a range of organotherapeutic and vitamin products, notably Ryzamin B, having a $B_1$ potency of at least 50 international units per gramme.

(1) G. W. CARNRICK CO. (Brooks and Warburton Ltd., 232–240, Vauxhall Bridge-road, S.W.) assured visitors that their research and control laboratories maintain standardisation and potency consistent with the present development of scientific knowledge. They have added to their well-known Hormotone a new product, Hormotone T, combining 200 international units of ovarian follicular hormone, biologically standardised, with the regular Hormotone endocrine formula, thus making the oral administration of ovarian hormone available. They also showed their Incretone endocrine tonic; their Trypsogen tablets with physiologically inert coating; and their Colopo cholagogue and laxative.—(165) THOS. CHRISTY AND CO., LTD. (4/12, Old Swan-lane, E.C.), had a number of interesting preparations on show. They market Estivin for hay-fever; Crepoplast non-

irritant elastic adhesive bandage; Gardner's syrup of hydriodic acid; Gorun ampoules and cachets for sciatica, lumbago, and arthritis; Nivea cream; Lysoform disinfectant and deodorant; and Musterole Brand mustard ointment.—(13, 14) COATES AND COOPER LTD. (94, Clerkenwell-road, E.C.1) displayed ethical medical and pharmaceutical preparations from the many foreign manufacturers whom they represent in this country, and offered to obtain from abroad any specialty unprocurable in England. Their wide range included Autacoids in aqueous solution; Apondon, a thyroid and ergocholin compound for reducing weight; Tonicine, male and female tonic; Cerocol colloidal cerium oxalates for the prevention of vomiting—including that associated with sea voyages; Hepferol, iron and liver in granules; Recresal phosphoric acid tonic for debility; Rossium, pyrazolon product of low toxicity, for alcoholism and drug addiction; and Validol, in pearls and liquid, which combines valerian with menthol.

(3) CONTINENTAL LABORATORIES LTD. (30, Marsham-street, S.W.1) had on view their popular Taxol, Detensyl, and Codoforme Botol. Their Crinex ovarian extract for oral administration and their Antipeol vaccine filtrate liquid are also well known.—(117, 118, 136, 138) CROOKES LABORATORIES (Park Royal, N.W.10) particularly stressed the new Colsulanyde chemotherapeutic preparation for all streptococcal infections; it has no contra-indications, and the equivalent of a ¾ lb. dose for a man fails to kill mice; also Ferrofax compound of iron and vitamin B, with manganese, copper, and cobalt as catalysts. They also showed Estoform for asthma; their original colloidal preparations, many of which are now available in the form of capsules for the convenience of travellers; various preparations of halibut-liver oil now recommended for eye-work and as a non-irritating ointment for wounds; Collosol Brand Wheat Germ Oil for sterility and abortion; and Collosol Brand Phospho-Mandelate for urinary sterilisation; together with a useful and simple test outfit. They also mentioned that their Super-D Oil has been found beneficial for arthritis.

(97) J. C. ENO LTD. (Pomeroy-street, S.E.) reminded visitors that their fruit salt owes some of its therapeutic efficiency to its careful preparation and high standard of purity; it is analysed at every stage of manufacture, and every trace of sugar, calcium, lead, sulphate of soda, and magnesium is meticulously excluded.—(149, 150, 160) EVANS SONS LESCHER AND WEBB LTD. (56, Hanover-street, Liverpool) showed a great number of medical specialties, and particularly mentioned the modern facilities available at their biological institute for the manufacture and standardisation of antitoxins. They emphasised Zant, a potent, non-toxic germicide; Neo-Hepatex (Parenteral), a new potent standardised liver extract; Novasorb, a magnesium trisilicate preparation; Colliron, a non-irritant colloidal iron with a trace of copper; and Hepatex (Oral) liver and vitamin B compound.

(70) FASSETT AND JOHNSON LTD. (86, Clerkenwell-road, E.C.) had a stand to ensure that doctors did not forget the value of their Antikamnia analgesic tablets with and without codeine; their Argyrol Silver Vitellin; their Eatan predigested beef preparation; their Ovoferrin Brand Colloidal Iron Tonic; their Zonite chloramine pessaries; and their Iobrine Anti-Rheumatic Seaweed Bath Salts.—(10, 11) GENATOSAN LTD. (Loughborough) are already well known for their Sanatogen, Genasprin, Cystopurin, Formamint, and Detoxicated Vaccines. Their Fissan Brand Products represent an improved method of cutaneous application in the form of dusting powders, pastes, lotions, and ointments; the underlying idea is that the efficacy of the remedy depends on the physical state in which it is applied as well as on its chemical nature. They had a new oral vaccine in liquid form for colds and a new compound of calcium and aspirin, in tablets and powder.

(95, 96, 109) GLAXO LABORATORIES (Greenford, Middlesex) offered a complete range of preparations for calcium therapy, including tablets for oral use containing sufficient vitamin D to ensure absorption; a sterile suspension of colloidal calcium with pure Calciferol G.L. for subcutaneous injection; and Calcium Levulinate G.L., a stable assimilable injection for capillary permeability, hepatic insufficiency, and hæmorrhagic conditions. They also showed their well-known Syrup Minadex tonic, and Dissolved Vaccines G.L., which are so prepared that they can be given in full doses from the start without producing unfavourable reaction.—(121) C. J. HEWLETT AND SON, LTD. (35/42, Charlotte-street, E.C.), had a number of their original preparations on view. Their range of Ampuliques contain single doses of sterilised injections of all kinds; and their Evapogens are medicated skin lotions which readily evaporate. Some of their mixtures, such as Heptagen, an aperient and cholagogue, Mist. Pepsinæ Co. c. Bismutho, Mist. Tussi Rub. Conc., and Somnigen, have been favourites for many years. They also supply a useful series of packed bags for the general practitioner and obstetrician.—(71) HOFFMANN-LA ROCHE CHEMICAL WORKS LTD. (51, Bowes-road, N.) showed a wide range of their analgesic, sedative, and hypnotic drugs, most of which have already proved their worth. Allonal, Saridone, Omnopon, Sedobrol, and Sedormid may be instanced. They also manufacture Larostidin for the histidine treatment of ulceration; Revitone tonic; Redoxon synthetic ascorbic acid in tablets and ampoules; and this year they introduce a new vitamin-B preparation, Benerva, in ampoules containing 500 international B units.

(45) HOWARDS AND SONS, LTD. (Ilford), had on view a range of their fine chemicals which have now been made without interruption for 138 years. To introduce novelty in an old remedy, they now make aspirin tablets in six colours! They drew special attention to their Agotan for uric acid conditions; their Optochin Base, a synthetic derivative of quinine, for pneumonia; Quinisan for aborting influenza and colds; and Bismuth Carb. B.P., light and extra light.—(63) JOHNSON AND SONS (Hendon, N.W.) presented their Estersil, a mixture of the ethyl and propyl esters of salicyl-glycollic acid for the relief of rheumatic infections.—(166) KAYLENE LTD. (Waterloo-road, N.W.) are familiar as the manufacturers of a highly colloidal form of kaolin and its combination with paraffin oil, charcoal, opaque substance, and formalin and menthol throat tablets. This year they introduced a new product, Magsorbent, a synthetic hydrated magnesium trisilicate for the treatment of ulceration, supplied in powder and tablets.—(119) LACTÉOL DU DR. BOUCARD (55, Welbeck-street, W.) have long been familiar to the medical profession: lactic ferments in tablets, powder, suppositories, ovules, ampoules, and dressings. Their Viatol is a vitamin tablet, and their Vaxa is a polymicrobic vaccine for oral administration.—(36) ELI LILLY AND CO., LTD. (2, 3, and 4, Dean-street, London, W.), showed their more outstanding pharmaceutical and biological specialties, including a 5 per cent. tannic acid jelly, Amertan; an oral respiratory vaccine, Entoral; their hypnotic, Amytal; their range of vaccine and serum preparations and "U.B.A." Undenatured Bacterial Antigens prepared according to A. P. Krueger's method; and several liver extract preparations.—(29) WM. MARTINDALE (12, New Cavendish-street, W.) showed Sterules Peptone in boxes of ten graded doses, for intramuscular injection; Novurit mercurial diuretic; E.S.T.P. ether soluble tar paste for eczema; Methyl Aspriodine liniment and balm; Sterules Tylcalsin for intravenous injection in sciatica and rheumatism; Iodo-Ray Sterules for intravenous and retrograde excretion urography; Calvitone calcium vitamin tonic; and many other interesting preparations.

(148) MENLEY AND JAMES LTD. (64, Hatton-garden, E.C.) reminded visitors of the value of Iodex as an ointment, plain, or with methyl salicylate, in liquid form, pessaries, suppositories, and

collapsible bougies for ear, nose, and throat and gynæcological work; their Eskay Brand of neurophosphates; their Pentnucleotide mixture of the sodium salts; their Pyridium urinary antiseptic; and the Benzedrine inhaler, a volatile vasoconstrictor with greater potency than ephedrine. They also showed Benzedrine brand tablets, which stimulate the higher nervous centres and raise blood pressure.—(103) H. R. NAPP LTD. (3 and 4, Clement's Inn, W.C.) had on show a wide range of preparations, including the original gold preparation, Sanocrysin; Sedonan, for direct application to painful ears; Vegemucin, a combination of vegetable mucins without any alkali, for indigestion and ulcer; Raminal for high blood pressure; Fiatal and Sembol, organotherapy compounds for female and male dysfunction respectively; and Xorox, a powerful hæmotonic.—(120) OPPENHEIMER SON AND CO., LTD. (Handforth Laboratories, Clapham-road, S.W.), showed Alphidine, a non-toxic, non-irritant, readily assimilable iodine; Cholesal, a soluble granulated preparation of peptone and magnesium sulphate, for hepatic congestion, migraine, and nausea; Vasotone liver preparation for menopausal flushings; Iodised Balmosa ointment; Roboleine, their tonic food for infants; Vitad, vitamins A and D; Vical, a calcium lactate and Vitad preparation; and Iodovical, a compound of calcium lactate, Vitad, and Alphidine.—(80) ORGANON LABORATORIES (1, Gordon-square, W.C.) showed their gland and vitamin preparations which are prepared under the close supervision of specially experienced scientific advisers. Pregnyl is the gonadotropic hormone of pregnancy, used for menorrhagia, metrorrhagia, repeated abortion, dysmenorrhœa, and undescended or undeveloped testes. Ambinon is an anterior pituitary aqueous extract standardised for gonadotropic and thyrotropic factors, which can be used alone or combined with Pregnyl. Pernaemon Forte is a protein-free liver extract of high activity, for injection. Menformon is their œstrone preparation, and their Progestin is now prepared from whale corpora lutea.—(73) OXO LTD. (Thames House, Queen Street-place, E.C.) had on view preparations of liver, gastric tissue, and spleen.

(64) PARKE, DAVIS AND CO. (Beak-street, W.) had a comprehensive display of their products, old and new. Among those more recently introduced are: Abidon Capsules, concentrates of vitamins A, B, and D; 1 in 100 adrenaline chloride, introduced for deep oral inhalation in asthma; Antuitrin "Growth" and "S," the former from the anterior lobe and the latter from pregnancy urine; Gonoderm gonococcus soluble toxin Corbus-Ferry, a bouillon filtrate for intradermal injections; Meningococcus Antitoxin; Mapharside, a synthetic arsenic compound for syphilis; and Hebaral Sodium, a barbituric compound.—(75) PETROLAGAR LABORATORIES LTD. (Oldhill-street, N.) have added to their familiar and popular products, which include Endrine nasal compound and Neobovinine 20 compound of liver and beef hæmoglobin, a new variety of Petrolagar, Petrolagar with cascara, which manages to associate cascara with a new—non-bitter—flavour; and a new "mild" Endrine for children and those with sensitive mucosæ. They also showed Kaldrox Brand Adsorbent Compound, colloidal kaolin highly activated by dispersion in aluminium hydroxide gel.—(99) PHARMACEUTICAL SPECIALITIES (MAY AND BAKER) LTD. (Dagenham, London) chose this year to emphasise, from among their many specialties, anæsthetics and preparations for the treatment of venereal disease. Vinesthene (vinyl ether) is a new inhalation anæsthetic for short surgical procedures; Planocaine is a preparation of procaine in a variety of formulæ for local, regional, and spinal anæsthesia; and Scuroform is a butoform preparation for mucous surfaces and especially for dental work. Proseptasine is a colourless non-toxic preparation for streptococcal infections which does not stain the tissues; and Formadermine is a dusting powder.

(147) SANDOZ PRODUCTS (J. FLINT) (134, Wigmore-street, W.) were recommending their Femergin ergot preparation for its inhibitor action on the sympathetic nervous system in migraine, tic douloureux, and Graves' disease; Bellergal as a corrective for autonomic disturbances; Ipecopan Brand Dover's powder preparation; Optalidon analgesic; Sandoptal hypnotic; Panthesine local anæsthetic; Calcium-Sandoz for oral, intramuscular, or intravenous administration; and Allisatin tablets for the administration of allium sativum. Calcibronat is their new organic salt presenting the combined sedative and neuro-tonic properties of the bromine ion and calcium gluconate.—(27, 28) SAVORY AND MOORE LTD. (143, New Bond-street, W.) had a display of pharmaceutical preparations, many of which are already popular, as, for example, Datura Tatula for the relief of asthma and hay-fever by inhalation and smoking; Nembutal sedative; Metaphedrin Inhalant No. 99, and the A.B.D. vitamin capsules. Their preparation of peptonised cocoa and milk is a useful nightcap and a pleasant change from a milk diet, and their Fructole Carpinæ Co. is a palatable bromide preparation free from sugar. Haliver Malt with Irradiated Ergosterol yields as much vitamin A as cod-liver oil and as much $B_1$ and $B_2$ as compressed yeast, and in addition has more vitamin D than cod-liver oil and supplies calcium, phosphorus, liver, and malt extract.—(47) SCHERING LTD. (185–192, High Holborn, W.C.) displayed a comprehensive range of medicinal and X ray products, particularly Progynon for all conditions of ovarian hypofunction; Progynon B Oleosum for more severe cases; Proluton, a corpus luteum preparation; and Solganal B Oleosum for gold therapy. Old friends like Veramon and Medinal, Uroselectan B and Neotropin were also on view.—(163, 164) SHARP AND DOHME LTD. (Mulford Biological Laboratories) (76–78, City-road, London, E.C.1) showed the various vaccine and serological products of their laboratories, and stressed their new local vasoconstrictor Propadrin hydrochloride, non-toxic and without unpleasant side reactions.—(155) WILLIAM R. WARNER AND CO., LTD. (300, Gray's Inn-road, W.C.), introduced Veracolate tablets containing the essential bile salts with cascara, phenolphthalein, and capsicum. This preparation they have added to their well-known Agarol, Anusol suppositories, Veganin sedative, Alka-Zane effervescent salt, and Cal-Bis-Nate antacid.

(66) CHAS. ZIMMERMANN AND CO., LTD. (9–10, St. Mary-at-Hill, London, E.C.), showed Unibar (Röhm and Haas) opaque preparation for radiography of the alimentary tract; Nitrolingual (Pohl) capsules of nitroglycerin, ensuring rapid and direct reaction in the mouth; Norit Medicinal Carbon; Chinosol antiseptics; and Posterisan suppositories and ointment for hæmorrhoids.

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DERBY ROYAL INFIRMARY.—The Duchess of Gloucester on Oct. 10th laid the foundation-stone of a £90,000 extension to this hospital. The foundation-stone of the present building was laid by Queen Victoria in 1891. Of the £90,000, the sum of £20,000 has been given by the family of the late Mr. S. Gee and £30,000 has still to be raised.

COMMONWEALTH FUND SERVICE FELLOWSHIPS.—The Commonwealth Fund of New York has established for British subjects a number of fellowships tenable at American universities, and it has been decided to offer not more than five of these fellowships during 1937 to men not over 35 holding appointments overseas under the British Government, the Government of India, or the government of a British dominion or colony. Candidates must submit a definite scheme of research work or advanced study, and special allowances will be made for equipment, tuition, and travelling, as well as a living allowance of $150 a month. The fellowships are tenable for from 15 to 24 months. The committee of award include Sir Walter Moberly, Sir James Irvine, F.R.S., Mr. E. A. Benians, Lord Halifax, Prof. A. V. Hill, F.R.S., and Prof. R. V. Southwell, F.R.S. Further information may be had from the secretary, 35, Portman-square, London, W.1, and all applications should reach him before Feb. 1st, 1937.

## A CONFERENCE ON WATERS IN AUSTRIA

A MEETING of the International Society of Medical Hydrology, organised by Dr. E. Freund of Vienna, took place in Austria from Oct. 10th to 16th. The opening ceremony and first medical discussion were held in the faculty of medicine at Innsbruck on Sunday, the 11th, with a visit to Bad Hall in the afternoon; the party then proceeded by way of Zell-am-See, spending the afternoon at that lake-side resort, to Bad Gastein. There and at Hof Gastein more meetings were held and the party then travelled to Salzburg for the concluding meetings and an excursion up the Gaisberg. The presidential address by Prof. Alois Strasser was a closely reasoned plea for the biological orientation of research in medical hydrology; and the papers read at the meeting were well balanced between the scientific and clinical aspects of the subjects dealt with.

In the first discussion, on the spa treatment of disorders of old age, Sir Humphry Rolleston made a distinction, very useful in the subsequent discussion, between normal old age (or senescence), senility, and premature senility. Dozent Dr. Louis de Pap (Budapest) followed on the general subject of treatment, and Dr. Schneyer (Bad Gastein) on treatment by radio-active waters. A lively polyglot discussion took place in the evening, cut short only by dinner-time. At Bad Gastein the subject was radio-activity in medicinal waters, from various points of view. Drs. Pénkava and Bêhounek (Prague) dealt with the methods available for measuring radio-activity and with various hypotheses on which the action of radon on cell-tissue might be explained. Dr. O. Gerke (Bad Gastein) gave a review of the biological effects of such waters, experimentally produced and discovered, in plant and animal life and on human beings. A paper by Drs. Pierret (La Bourboule) and Stieffel (Plombières), presented by Dr. Rimey (Luxeuil), then dealt with the main aspects of their clinical action, showing the difficulty of isolating that of the radon from the chemical and thermal properties of the various waters in which it was present in larger quantities. Supplementary papers (not printed in advance) on experiments with radio-active mud and the Arneth-Schilling leucocyte count by Dr. Oedön Schulhof (Heviz), on revitalisation by Dr. P. H. Humphris, and on hormonal action, by Dr. F. Bravo (Chile), were read and discussed in the same connexion, and practical demonstrations were given in the new research laboratory by Dr. Granichstaedten and his assistants. The rest of the papers read were on subjects not chosen beforehand. The authors included Profs. Boehm and Gollwitzer-Meier (Germany), Scherbakow (Yugoslavia), Reichart (Czechoslovakia), while Dr. Kersley (Bath) gave a short paper and showed slides and a film illustrating the treatment of rheumatic cases. A striking feature of the medical discussions was the masterly summing up of the various prepared and spontaneous contributions (these last translated during the meeting) by the president.

The waters in Bad Gastein and Hof Gastein being laid on in the hotels, there was less to see than sometimes in the way of bath establishments. But visits to the point of emergence of the hot springs were made and the visitors were allowed to try the baths for themselves. There were participants from many European countries and from Australia, New Zealand, Japan, and Chile.

The papers read at the meeting will appear in full or summarised in the October and January (1937) numbers of the *Archives of Medical Hydrology*.

# MEDICAL NEWS

### University of Cambridge

On Oct. 16th the following degrees were conferred:—

*M.D.*—G. R. Ellis and L. R. W. Price.
*M.B. and B.Chir.*—G. J. H. Maud, H. B. Bagshaw, A. S. Till, and A. H. Zair.
*M.B.*—E. L. Cohen.
*B.Chir.*—J. F. Lown, A. B. MacEwan, and J. G. C. Spencer.

At recent examinations the following candidates were successful:—

D.M.R.E.

*Part II.*—V. R. Ginde, A. D. Versteegh, and J. B. Watson.

### University of Sheffield

At the final examination for M.B., Ch.B., Parts II. and III., held recently, Marjorie I. Godson, F. C. Jackson, and J. L. Linacre were successful.

### Royal College of Physicians of London

On Oct. 19th Sir Walter Langdon-Brown delivered the Harveian oration which is published on p. 961 of this issue. After the lecture Lord Dawson, as president, presented the Weber-Parkes medal to Sir StClair Thomson for his work on tuberculosis of the larynx and the Moxon gold medal to Dr. Edward Mellanby, F.R.S., for his work on the problems of nutrition.

### The Buckston Browne Dinner

The annual dinner of fellows and members of the Royal College of Surgeons of England will be held at the College, Lincoln's Inn-fields, on Thursday, Nov. 12th, at 8 P.M. It was in July, 1927, that Mr. G. Buckston Browne, F.R.C.S. (now Sir Buckston Browne), gave to the College a sum of £5000 as an endowment to provide an annual dinner on the College premises for fellows and members of the College and such others as the president and council may wish to invite, at least half of the guests invited to be members of the College. This annual dinner has been held regularly since 1928, those present usually numbering about 100. This year will be shown after dinner films prepared by the late Dr. R. G. Canti, and in the museum there will be demonstrations by the College research workers.

### University of Wales

At recent examinations for the diploma in public health (Part II.) Violet L. de A. Hickson, D. J. N. McNab, J. B. S. Morgan, W. E. Thomas, and J. T. Watkins were successful.

### University of Glasgow

Sir Frederick Gardiner has given £10,000 to the university to supplement the same sum which was allocated from the estate of his brother, Mr. William Gardiner. The money will be devoted to establishing the Gardiner Medical Institute, which will give increased facilities for research and teaching in connexion with the regius professorship of the practice of medicine to which Dr. J. W. McNee was lately appointed.

### Naval Medical Compassionate Fund

At the quarterly meeting of the directors of this fund, held on Oct. 9th, with Surgeon Vice-Admiral Sir Basil Hall, medical director-general of the navy, in the chair, the sum of £186 was distributed among the applicants.

### British Science Guild

A dinner will be held at the Hyde Park Hotel, Knightsbridge, London, S.W., on Tuesday, Nov. 24th, at 8 P.M., when the president of the guild, Lord Melchett, will preside. A presentation from supporters of the guild will be made to Sir Richard Gregory, F.R.S., chairman of the council of management.

### Committee against Malnutrition

The new Nutrition film of the Gas Light and Coke Company, which was described in our last issue (p. 927), will be shown at a public meeting organised by this committee in the Conway Hall, Red Lion-square, London, W.C., at 8 P.M., on Thursday, Nov. 5th. The chair will be taken by Mr. Harold Macmillan, M.P., and the speakers will include Dr. T. O. Garland, Dr. Janet Vaughan, and Dr. Maitland Radford. Tickets at 1*s.* and 6*d.* may be had from the committee, 19c, Eagle-street, Holborn, W.C.1.

THE King has given Dr. T. H. McLeod permission to wear the insignia of the fourth class (civil division) of the Order of Al Rafidain, which has been conferred upon him by the King of Iraq, in recognition of his valuable services as chief medical officer (Mosul Liwa) in the Iraq Civil Health Service.

### Money for Scottish Hospitals

The trustees of the estate of the late Mr. W. L. Gardiner have made donations of £5000 each to Glasgow Western Infirmary and Stirling Royal Infirmary.

### Royal Sanitary Institute

Lieut.-Colonel Gerald Leighton, formerly inspector of Army Food Contracts, will deliver the Benjamin Ward Richardson lecture at the institute, 90, Buckingham Palace-road, London, S.W., on Tuesday, Nov. 10th, at 5.30 P.M. The subject of the lecture will be the supervision of the nation's food-supply.

### Royal Dental Hospital of London

*School of Dental Surgery.*—The twenty-seventh annual At Home of this school will be held on Saturday, Nov. 21st. The morning from 9.30 A.M. to 12.30 P.M. will be devoted to demonstrations at the in-patient department at Charing Cross Hospital and in the departments of the Royal Dental Hospital, where in the afternoon there will also be various exhibitions.

On the same evening, at 7 for 7.30 P.M., the dinner of past and present students of the hospital will be held at the Trocadero (Empire Rooms), when Mr. J. H. Badcock will preside.

### Post-graduate Teaching in Glasgow

The Glasgow Post-Graduate Medical Association has arranged for a series of lectures and clinical demonstrations for practitioners to be given on Wednesday afternoons from Nov. 4th to May 26th at 4.15 P.M. Special courses in ophthalmology, obstetrics, radium therapy, and diseases of the ear, nose, and throat will also be held during the session. The secretary may be addressed at 9, Woodside-terrace, Glasgow, C.3.

### Course on Hospital Administration

A course of lectures and demonstrations on clinical practice and in hospital administration will be given at the North-Western Hospital, Lawn-road, London, N.W., by Dr. A. Joe on Mondays and Wednesdays at 10.45 A.M., and on alternate Saturdays at a time to be arranged. The course will begin on Jan. 13th and further information may be had from the medical officer of health, London County Council, Public Health Department (Special Hospitals), County Hall, S.E.1.

### Lectures on Child Psychology

The women's committee of the National Institute of Industrial Psychology and the London Child Guidance Clinic have arranged a second series of lectures on this subject. On Monday, Nov. 2nd, Dr. William Moodie will speak on the problems of the ordinary child, and on Nov. 16th Dr. Elizabeth Sloan Chesser on the making of a happy human being. Mr. Alec Rodger will deliver the third lecture on Nov. 23rd, when he will speak on talents and temperaments. The lectures will be given at Carnegie House, 117, Piccadilly, W., at 3.15 P.M.

### King's College Hospital

A meeting will be held at this hospital on Monday, Oct. 26th, when the hospital libraries will be on view. Mr. A. D. Power will describe the patients' library, Miss K. F. Armstrong the nurses' library, and Dr. A. Gilpin the library of the medical school.

The annual dinner of past and present students of this medical school will take place at 8 P.M. at the May Fair Hotel on Saturday, Oct. 24th. Particulars of the intensive post-graduate course, which is open to all practitioners and will be held on Oct. 24th and 25th, will be found in our Medical Diary.

The enlarged ear, nose, and throat department of the hospital is to be opened next Tuesday afternoon, Oct. 27th. Beforehand, at 3.30 P.M., Sir StClair Thomson will give an account of developments in the treatment of diseases of the ear, nose, and throat.

### Albert Dock Hospital

This hospital has become unsafe owing to soil subsidence and is to be rebuilt on an adjoining site granted by the Port of London authority. The principal feature of the new hospital will be a fracture clinic and a residential rehabilitation centre.

### Guildford Maternity Home

On Sept. 23rd Lady Jervis laid the foundation-stone of the new maternity home and nurses' hostel of the Guildford Queen's District Nursing Association. The old buildings are inadequate; the new will cost £16,000, about half of which has already been subscribed.

### London Hospital Dinner

As chairman of the annual dinner at the Trocadero on Oct. 15th Mr. Russell Howard spoke of some of the great men of his 42 years at the London: Gowers, Openshaw, Mansell Moullin, Jeremiah McCarthy ("we used to think he knew all about surgery; and I'm not sure that he didn't"), Treves, Waren Tay, Hurry Fenwick, Eve, Herman and Lewers, F. J. Smith, Hughlings Jackson, and Henry Head. A striking difference between the present and the past was that the work formerly done by one member of the staff was now done by two, three, or four. "I am a landmark," said Mr. Howard; for the general surgeon was disappearing and specialism had come to stay. "At the London," he continued, "our young men have much more work to do than in other hospitals. . . . We insist on our men becoming general surgeons before they become specialists." The consequences were unfortunate, for when a staff vacancy came to be filled, and need arose for someone with specialist knowledge to fill it, the appointment often had to go to a man from another school. It was essential that London men should be able to get more specialist experience. Lord Knutsford had built up the hospital for the care of the sick poor; but the sick poor were nowadays catered for elsewhere, and the London must go beyond that. To have more specialists there must be a larger staff, and more ancillary workers. If the young men were to do any good they must have more leisure, and opportunities to go abroad: "give them a chance and there will be no more need to go outside the London." Last year, even with selection, there was a record entry; and the student of to-day was just as ardent and argumentative and unformed as ever. Prof. William Wright, proposing the chairman's health, described him as one of the last of the great general surgeons and a great teacher. The secret of his power was that he tried to instil into his dressers ideas of accuracy and precision: nothing might be "here or there," or "more or less." Like Kipling's sergeants, he took great care that they washed behind their ears; and this, said Prof. Wright, was the very kernel of medical education.

Though Mr. Howard expressly announced that this evening was by no means the proudest occasion of his life, it might well have been, for he was left in no doubt of the opinion of old Londoners about his work. This having been made clear, there were no more speeches and everyone settled down quietly to the old sport of pretending to remember everyone else's name. It became easier after midnight.

### Chelsea Clinical Society

On Tuesday last, at the Rembrandt Hotel, Mr. Andrew Rugg-Gunn presided over this society's annual dinner. The principal guest was Sir Arnold Wilson, M.P., who said that as chairman of the Industrial Health Research Board he had found doctors in closer touch with current affairs than were lawyers, churchmen, or educationists. The medical profession, however, must stand back and look at things objectively. The voluntary hospital system had now become a positive incubus, while National Health Insurance, with its chance allocation of additional benefits, left so many gaps that the country was losing at least half the advantages of a decent health service. Doctors were expected to treat the wrong diseases in the wrong places in the wrong manner, and there was widespread dissatisfaction with the manner in which specialist appointments were made by laymen. Facilities for post-graduate work must be improved, and the medical student must be selected more carefully and subjected to less

cramming. Close orders, such as professions, were apt to become more obstructive to reform than outsiders, and the time had come for doctors to make a forward move on their own lines before change came from elsewhere. At present we had no Ministry of Health, but only the old Local Government Board under another name. There would be no progress till the profession took up the task of managing its own affairs, as in Germany, arranging full scope for talents and security for needs. The president, turning to even larger problems, suggested that Home Rule for England would allow the other British nationalities to get on with the bigger tasks of government. He prophesied grimly that Gaelic might yet become the final language of civilisation in these islands. Meanwhile the Chelsea Clinical Society, with its happy association of specialists and practitioners, remained the last stronghold of the male and preserved a broad and humanitarian view of medicine. Mr. Lawrence Abel proposed The Guests, who included the Norwegian Minister, in a speech containing a record number of good stories per minute. Sir John Parsons, F.R.S., as president of the Royal Society of Medicine, assured the smaller societies of its goodwill, and Commander F. N. Stagg delivered an eloquent appreciation of the Scandinavian element in British and European breeding and culture.

### Gifts from Lord Nuffield

Lord Nuffield has offered to contribute £80,000 to the £500,000 appeal which has been launched by Guy's Hospital. The gift, which is a conditional one, redeemable only when the remaining £420,000 has been collected, will be devoted to the necessary extensions to the nurses' home. Lord Nuffield has also presented £30,000 to the Acland Nursing Home at Oxford which was founded nearly sixty years ago in honour of Sir Henry Acland. The money will be used to extend the accommodation of the home and install new equipment. On another page appears an announcement of a gift towards the production of talking books for the blind.

## Medical Diary

### SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, Oct. 26th.
*Odontology.* 8 P.M. Mr. W. Warwick James: The Failure of Teeth and the Future. (Presidential Address.) Mr. M. A. Rushton and Mr. F. A. Walker: Unilateral Secondary Facial Cleft with Excess Tooth and Bone Formation.
TUESDAY.
*Medicine.* 5 P.M. Dr. Maurer: The Treatment of Pleural Effusions. Dr. Burton Wood and Dr. Geoffrey Marshall will also speak.
WEDNESDAY.
*Comparative Medicine.* 5 P.M. Major G. W. Dunkin: Para-tuberculosis of Cattle and Sheep. (Presidential Address.)

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
MONDAY, Oct. 26th.—8.30 P.M., Dr. Malcolm Donaldson: Carcinoma of the Cervix.

BRITISH PSYCHOLOGICAL SOCIETY.
*Medical and Æsthetics Sections.*
WEDNESDAY, Oct. 28th.—8.30 P.M., Mr. J. S. Barwell and Dr. John Rickman: The Nature of Ugliness.

SOUTH-WEST LONDON MEDICAL SOCIETY.
MONDAY, Oct. 26th.—9 P.M. (Bolingbroke Hospital, Wandsworth Common), Dr. Gordon Holmes, F.R.S.: Headache—Mistakes in Diagnosis.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Thornhaugh-street, W.C.
FRIDAY, Oct. 30th.—5 P.M., Dr. Ernest Ward: Tuberculosis. (Presidential Address.)

ASSOCIATION OF INDUSTRIAL MEDICAL OFFICERS.
FRIDAY, Oct. 30th.—5 P.M. (London School of Hygiene, Keppel-street, W.C.), Business Meeting. 6 P.M., Dr. H. E. Collier: The Education of Medical Practitioners for Industry. Dr. G. P. Crowden: Post-graduate Training in the Practice of Preventive Medicine in Industry.
SATURDAY.—10 A.M., Visit to General Post Office, St. Martin's-le-Grand, E.C.

### LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.
MONDAY, Oct. 26th.—5 P.M., Dr. L. W. Proger: Intestinal Diseases.
FRIDAY.—5 P.M., Dr. A. J. E. Cave: The Inguinal Canal and its Hernie.

CHADWICK LECTURE.
TUESDAY, Oct. 27th.—8.15 P.M. (Manson House, 26, Portland-place, W.), Mr. Eardley Holland: Perils of Parturition to the Child—Their Nature and Prevention.

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, Oct. 28th.—3.30 P.M., Prof. V. H. Mottram: Diet in Winter.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.
MONDAY, Oct. 26th.—2.15 P.M., Dr. Duncan White: Radiological Demonstration.
TUESDAY.—2 P.M., Prof. Kettle, F.R.S.: Pathological Demonstration. 4.30 P.M., Dr. H. Yellowlees: Psychological Medicine.
WEDNESDAY.—Noon, clinical and pathological conference (medical). 2.30 P.M., clinical and pathological conference (surgical). 4.30 P.M., Mr. J. E. Barnard, F.R.S.: Microscopy.
THURSDAY.—2.15 P.M., operative obstetrics. 3.30 P.M., Dr. W. H. F. Oxley: Obstetric Emergencies.
FRIDAY.—2.15 P.M., Department of Gynæcology: Pathological Demonstration. 2.30 P.M., Mr. G. Jefferson: Surgery of Nervous System.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics or operations, gynæcological clinics or operations, refresher course for general practitioners.

INSTITUTE OF MEDICAL PSYCHOLOGY, Malet-place, W.C.
MONDAY, Oct. 26th.—3 P.M., Dr. J. A. Hadfield: Mental Mechanism. 4.30 P.M., Dr. Maurice Wright: Principles of Psycho-analysis (Freud). 5.45 P.M., Dr. E. B. Strauss: Case-histories—(1) Anxiety States.
THURSDAY.—3 P.M., Prof. Millais Culpin: Anxiety States. 4.30 P.M., Dr. James Kirsch: Analytical Psychology (Jung). 5.45 P.M., Dr. E. B. Strauss: Case-histories—(2) Conversion Hysteria.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Oct. 26th.—10 A.M., skin clinic. 11 A.M., surgical wards. 2 P.M., operations, surgical and gynæcological wards, medical, surgical, and gynæcological clinics.
TUESDAY.—10 A.M., medical wards. 11 A.M., surgical wards. 2 P.M., operations, medical, surgical, and throat clinics.
WEDNESDAY.—10 A.M., children's ward and clinic. 11 A.M., medical wards. 2 P.M., gynæcological operations, medical, surgical, and eye clinics. 4.15 P.M., Mr. Harvey Jackson: Accessory Methods of Localisation of Brain Tumours.
THURSDAY.—10 A.M., neurological and gynæcological clinics. Noon, fracture clinic. 2 P.M., operations, medical, surgical, genito-urinary, and eye clinics. 4.15 P.M., venereal diseases.
FRIDAY.—10 A.M., medical wards, skin clinic. Noon, lecture on treatment. 2 P.M., operations, medical, surgical, and throat clinics. 4.15 P.M., Dr. Hugh Gordon: Psychological Aspects of Dermatology.
SATURDAY.—10 A.M., children's and surgical clinics. 11 A.M., medical wards.
The lectures at 4.15 P.M. are open to all medical practitioners without fee.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Oct. 26th, to SATURDAY, Oct. 31st.—ST. JOHN'S HOSPITAL, 5, Lisle-street, Leicester-square, W.C., afternoon course in dermatology.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W., all-day course in gynæcology.

KING'S COLLEGE HOSPITAL.
SATURDAY, Oct. 24th.—11 A.M., Dr. Clayton and Dr. Cooksey: Physical Treatment of Fibrositis. Noon, Dr. Davies: Diagnosis and X Rays with Demonstration Films. 2 P.M., clinical cases will be demonstrated, including medical, fracture, and dermatological cases. 3.30 P.M., demonstration of cardiological cases by sound reproduction. 4.45 P.M., discussion on ductless gland therapeutics.
SUNDAY.—10.30 A.M., Dr. J. Livingstone: New Drugs and Therapeutic Remedies. 11.15 A.M., Dr. W. Sheldon: Abdominal Tubercle in Children. Noon, Mr. Wakeley: film and discussion on circumcision.
Open to all medical practitioners.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
WEDNESDAY, Oct. 28th.—2 P.M., Dr. B. E. Schlesinger: Artificial Feeding in Infancy. 3 P.M., Dr. A. Signy: Blood-grouping and Methods of Transfusion.
Out-patient clinics daily at 10 A.M. and ward visits at 2 P.M.

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle-street, W.C.
TUESDAY, Oct. 27th.—5 P.M., Dr. J. E. M. Wigley: Tuberculosis Cutis.
THURSDAY.—5 P.M., Dr. A. M. H. Gray: The Sarcoids and Lupus Pernio. (Chesterfield Lectures.)

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Oct. 26th.—3.30 P.M., Dr. Kinnier Wilson: The Motor System.
TUESDAY.—3.30 P.M., Mr. Sydney Scott: Auditory and Vestibular Nerves.
WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.
THURSDAY.—3.30 P.M., Dr. Gordon Holmes, F.R.S.: The Sensory System.
FRIDAY.—3.30 P.M., Dr. Bernard Hart: Psychopathology (IV.).
Out-patient clinic daily at 2 P.M.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.
WEDNESDAY, Oct. 28th.—4 P.M., Mr. A. J. Gardham: Treatment and Prognosis of Some Common Fractures in the Upper Limb.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Oct. 28th.—4.30 P.M., Mr. Jocelyn Swan: Tumours of the Bladder.
ST. MARY'S HOSPITAL, W.
THURSDAY, Oct. 29th.—5 P.M., Dr. G. O. Barber: National Health Insurance (General Practice IV.).
SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Balham.
WEDNESDAY, Oct. 28th.—4 P.M., Dr. Norman Haire: Birth Control Methods.
LEEDS GENERAL INFIRMARY.
TUESDAY, Oct. 27th.—3.30 P.M., Mr. Flint: Demonstration of Surgical Cases.
LEEDS PUBLIC DISPENSARY AND HOSPITAL.
WEDNESDAY, Oct. 28th.—4 P.M., Dr. H. G. Garland: Demonstration of Neurological Cases.
MANCHESTER ROYAL INFIRMARY.
TUESDAY, Oct. 27th.—4.15 P.M., Mr. R. L. Newell: Minor Surgery of the Rectum.
FRIDAY.—4.15 P.M., Mr. H. H. Rayner: Demonstration of Surgical Cases.
ANCOATS HOSPITAL, Manchester.
THURSDAY, Oct. 29th.—4.15 P.M., Dr. R. Ellis: Albuminuria.

# Appointments

MINSKI, LOUIS, M.D. Durh., M.R.C.P. Lond., D.P.M., has been appointed Deputy Medical Superintendent, Ewell Mental Hospital, Epsom.

*Aberdeen Royal Infirmary.*—The following appointments are announced:—
MACKWORTH, ELIOT, M.B. Aberd., Medical Registrar;
TOUGH, J. SCOTT, M.B. Edin., Senior Casualty Officer; and
FULLERTON, H. W., M.B. Aberd., Clinical Tutor.

*Charing Cross Hospital.*—The following appointments are announced:—
MCGINN, J. T., M.B. Dub., Diagnostic Clinical Assistant to the Radiological Department;
EBAN, I., M.B. Belf., Therapeutic Clinical Assistant to the Radiological Department; and
WALLIS, S. D., M.R.C.S. Eng., D.O.M.S., Clinical Assistant to the Ophthalmic Department.

*Duchess of York Hospital for Babies, Manchester.*—The following appointments are announced:—
KILNER, T. POMFRET, M.B. Manch., F.R.C.S. Eng., Hon. Consulting Plastic Surgeon;
BENTLEY, F. H., M.B. Manch., F.R.C.S. Eng., Hon. Visiting Plastic Surgeon;
DUTHIE, O. M., M.D. Manch., Hon. Ophthalmologist;
NICHOLSON, J. C., M.B. Manch., D.A., Assistant Hon. Anæsthetist; and
ASHER, CECILE, M.D. Lond., Registrar.

# Vacancies

*For further information refer to the advertisement columns*

*Alton, Hampshire, Lord Mayor Treloar Cripples' Hospital.*—Third Asst. Res. M.O., at rate of £150.
*Bath Royal United Hospital.*—Res. O., £150.
*Bath and Wessex Children's Orthopædic Hospital, Combe Park.*—H.S., at rate of £120.
*Battersea General Hospital, S.W.*—Hon. Medical Staff.
*Birkenhead Municipal Hospital.*—Sen. Res. M.O., £350.
*Birmingham, Canwell Hall Babies' Hospital.*—Res. M.O., at rate of £250.
*Bolingbroke Hospital, Wandsworth Common, S.W.*—H.S., at rate of £120.
*Brighton, Sussex Eye Hospital, Eastern-road.*—H.S., at rate of £150.
*Bristol, Frenchay Park Children's Orthopædic Hospital, &c.*—Res. M.O., £250.
*Burnley Victoria Hospital.*—H.P., at rate of £150.
*Burton-on-Trent General Infirmary.*—H.P. and Cas. O., £150.
*Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.*—Hon. Third Asst. to Out-patient Dept.
*Chester, Barrowmore Tuberculosis Sanatorium, &c., Great Barrow.*—H.P., at rate of £150.
*Colonial Medical Service.*—M.O.'s.
*Croydon County Borough.*—Asst. M.O.H. for Obstetrics, £750.
*Dingwall, Lewis Sanatorium and Infectious Diseases Hospital.*—Res. M.O., at rate of £250.
*Dorchester, Dorset County Hospital.*—H.S., at rate of £150.
*Dudley Guest Hospital.*—H.S., £130.
*Eastbourne, Royal Eye Hospital, Pevensey-road.*—H.S., £100.
*Eastcote, Middlesex, St. Vincent's Orthopædic Hospital.*—Registrar, £150.
*East Ham Memorial Hospital, Shrewsbury-road, E.*—Hon. Dental Surgeon.
*Edinburgh, City Fever Hospital, Colinton Mains.*—Med. Supt., £750.
*Edmonton, North Middlesex County Hospital.*—Jun. Res. Asst. M.O., at rate of £250.
*Elizabeth Garrett Anderson Hospital, Euston-road, N.W.*—Hon. Ophth. Surgeon.
*General Lying-in Hospital, York-road, Lambeth, S.E.*—M.O. for Infant Welfare Centre. Also Jun. Res. M.O., at rate of £100.
*Glasgow University.*—St. Mungo (Notman) Chair of Pathology.
*Guildford, Royal Surrey County Hospital.*—H.S., £150.
*Harrogate Royal Bath Hospital.*—Res. M.O., £156.
*Hastings, Royal East Sussex Hospital.*—Sen. H.S., at rate of £200.
*Heston and Isleworth Borough.*—Sen. Asst. M.O.H. and School M.O., £600.
*Hove General Hospital.*—Hon. Surgeon. Also Res. M.O., at rate of £200.
*Ilford, King George Hospital.*—H.S., at rate of £100.
*Larbert, Stirling District Mental Hospital.*—Jun. Asst. M.O., £300.
*Lincoln County Hospital.*—Jun. H.S., £150–£200.
*London County Council.*—Two Res. Med. Supts., each £950. Asst. M.O.'s, Grade 1, each £350. H.P.'s, each at rate of £120. Also Part-time M.O., at rate of £40.
*London Hospital, E.*—Med. First Asst. and Reg., £300.
*London Lock Hospital, 283, Harrow-road, W.*—Surg. Reg. to Female Lock Hospital, £100.
*Loughborough Borough.*—M.O.H. and School M.O., £800.
*Manchester, Booth Hall Children's Hospital.*—Med. Supt., £1100.
*Manchester, Park Hospital, Davyhulme.*—Res. Obstet. O., £400.
*Manchester Royal Children's Hospital, Pendlebury.*—Res Surg. O., at rate of £125.
*Margaret-street Hospital for Diseases of the Chest, W.*—Hon. Asst. Physician.
*Middlesex County Council.*—Ophthalmic Surgeon, £2 12s. 6d. per session.
*Middlesex Hospital Medical School, W.*—Asst. Physicist, £300.
*National Hospital for Diseases of the Nervous System, Queen-square, W.C.*—Asst. Aural Surgeon.
*Nottingham City Hospital.*—Res. Surg. O., £350.
*Portsmouth Royal Hospital.*—Cas. O., at rate of £130.
*Preston and County of Lancaster Royal Infirmary.*—Bacteriologist and Pathologist, 12 gns. per week.
*Romford, Oldchurch Hospital.*—Jun. Res. M.O., £250.
*Royal Air Force Medical Service.*—Commissions.
*Royal Free Hospital, Gray's Inn-road, W.C.*—Hon. Asst. Dental Surgeon.
*Royal London Ophthalmic Hospital, City-road, E.C.*—Pathologist and Curator, £200. Also two Out-patient Officers, each £100.
*Royal Naval Medical Service.*—M.O.'s.
*St. George's Hospital, S.W.*—Obstet. Reg. and Tutor, £90.
*Sheffield Children's Hospital.*—H.S., at rate of £100.
*Sheffield, Lodge Moor Infectious Diseases Hospital.*—Jun. Asst. M.O., £200.
*Stockport County Borough.*—Asst. M.O.H., £500.
*Torquay, Torbay Hospital.*—H.S., at rate of £175.
*Wakefield Mental Hospital.*—Asst. M.O., £350.
*Walsall General Hospital.*—Hon. Asst. Surgeon to Ear, Nose, and Throat Dept.
*Westminster Hospital, Broad Sanctuary, S.W.*—Surgeon.
*West Riding of Yorkshire County Council.*—Two Asst. Tuber. O.'s, each £500.

Under the Workmen's Compensation Act, 1925, the Home Secretary will appoint an Ophthalmic Specialist Medical Referee for County Court Districts in Monmouthshire and Glamorgan. Applications should reach the private secretary, Home Office, Whitehall, London, S.W.1, before Nov. 5th.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Edenbridge (Kent) and Highworth (Wilts).

# Births, Marriages, and Deaths

## BIRTHS

CHADWICK.—On Oct. 13th, the wife of Dr. N. E. Chadwick, Hove, of a daughter.
GRAVES.—On Oct. 16th, at Chester, the wife of Dr. Philip R. Graves, of a daughter.
MALONE.—On Oct. 10th, at West Dulwich, S.E., the wife of Dr. W. Malone, of a son.
PARKER.—On Oct. 14th, at Sandgate, Kent, the wife of Dr. F. Gerald Parker, of a daughter.
RYDER-LEWIS.—On Oct. 12th, at Ladbroke-gardens, W., the wife of Dr. Arthur Ryder-Lewis, of a son.
TOMES.—On Oct. 13th, at East Dulwich, S.E., the wife of Cyril Tomes, L.D.S. R.C.S. Eng., of a daughter.
TUPLING.—On Oct. 17th, at Guy's Hospital, the wife of Dr. Parker Tupling, of twin daughters.

## MARRIAGES

LAWRENCE-SMITH—GOUGH-FOXWELL.—On Oct. 10th, at the Church of St. Ambrose, Gosport, Surg. Lt.-Comdr. Alexander Maxwell Lawrence-Smith, R.N., to Millicent, daughter of the late Mr. and Mrs. H. Gough-Foxwell, of Newport, Mon.

## DEATHS

APPLEYARD.—On Oct. 14th, at 7, Spring Bank-place, Bradford, Lilian Alice (Lilla), dearly loved wife of William Appleyard, F.R.C.S.
BOURKE.—On Oct. 13th, at Windsor Hotel, Lancaster-gate, W., Lt.-Col. Ulick Joseph Bourke, L.R.C.S. Irel., R.A.M.C. (retd.).
DAVIS.—On Oct. 15th, at La Fantaisie, Jersey, Lt.-Col. Edward Davis, M.R.C.S. Eng., R.A.M.C. (retd.), in his 78th year.
FAUSSET.—On Oct. 10th, at Hopwas, near Tamworth, Herbert John Fausset, V.D., M.D. Dub., aged 90.
HENRY.—On Oct. 18th, at Beckenham, William Francklin Henry, L.D.S. Eng., late of King William-street, E.C., aged 93.
HIBBERD.—On Oct. 14th, at Mount Ararat-road, Richmond, Edward Hibberd, M.D. St. And.
STEIL.—On Oct. 11th, at Glebe Court, Southampton, J. W. Hancock Steil, M.B. Glasg., Hon. Squadron Leader, R.A.F., aged 73.

***N.B.**—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# NOTES, COMMENTS, AND ABSTRACTS

## WILLIAM GOODORUS: SERJEANT SURGEON

By R. R. JAMES

THE fifth name upon the roll of those members of the Barber-Surgeons' Company who have served the office of Serjeant Surgeon is that of William Goodorus. Admitted to the Freedom in 1576, he was elected Warden in 1589 and in 1592. In the latter year he is noted as Serjeant Surgeon, so he must have been promoted to this office after the death of Serjeant Robert Balthrop which occurred in December, 1591. Goodorus was thus Serjeant Surgeon to Queen Elizabeth, and on the accession of James the First he continued in office. He was Master of the Company in 1594 and again in 1603. His years as Master were fairly uneventful save for the death of Queen Elizabeth in 1603. James tried to borrow money from the Company in 1603, but they replied that they had none. Some other notes about Goodorus will be found in Young's Annals: thus, in 1610 when the Court sent round the hat "to thentent to bringe the howse out of debt," most of the members expressed their willingness to contribute, but "Mr. Serjaunt Goodorus," with some other thrifty souls, would only promise "to thinck of itt."

Three years before this Goodorus had been appointed an examiner in surgery by the Company. He benefited under the will of Robert Balthrop, who bequeathed "to my felowe Goodorus one of my launcettes that is sett in golde and enamyled." In the lengthy schedule of effects annexed to Balthrop's will is a note of some instruments and books to be given to his apprentice, John Edwards. Among these occurs Eliot's Dictionary "which I have lent to my felowe Goodorus."

From the account of William Clowes in the Annals we learn that Goodorus went as surgeon to the forces in the expedition to the Low Countries, under the Earl of Leicester, in 1585. Clowes, in "Proved Practice," says that many of the surgeons were most unskilful and slew more than the enemy did, though he and his friend Goodorus did not lose a case.

Goodorus died in December, 1613. His will (P.C.C. Capell, 20) was signed on December the First and proved on the Fourteenth. For the following abstract of it I am indebted to my friend Mr. Harvey Bloom.

"Will^m. Goodorus Esq. Serjeant Chirurgeon to the King's most excellent Ma^tie. Soule to Allmightie God. Body to the earth, to be buried in the parish church of Eastgreenwiche as neere the body of my late wief deceased as conveniently may be. To Sister-in-lawe Mary, the wief of Thomas Thorne, gardiner, a messuage to dwell in for lief and 40*s*. To Johanne Cooke, 40*s*. To the poor of Eastgreenwiche, 40*s*., to be distributed amongst them in breade on the day of my funeralle. To Dudley Goodorus, my sonne, my messuage neare the high bridge in Eastgreenwiche, to him and his heirs, immediately after the death of Frauncis Answorth, my daughter, and a parcel of land known as the "new forest" neere Stratford Langthorne Co. Essex. To Johanne, wief of my said sonne, £20, and to his children, Dudley, William and Elizabeth, £5 each. Residuary legatee and executor, said sonne. Overseers. Hugh Hall, of London, Esq., Robert Frankes, of Eastgreenwiche, Esq., William Bradley of Thaidon bois, Co. Essex, yeoman. Witnesses, W^m. Whitehead, Ra. Briscoe, Ed^md. Salt, Scrivenor.

Son Dudley took up his Fr[illegible]dom of the Company in 1604 and on July 1st, 1606, was fined for absence at lectures, but the fine was "mitigated" to Xiid. In the year 1597 another son, Robert, was admitted into the Freedom by patrimony. On July 8th, 1606, the Court minutes state that Robert Goodorus hath done no service at all for the space of theis fower yeares last past in his livery. The Court decided that his father should be spoken to before settling the amount of the fine; but so far as my researches at Barbers' Hall have gone the amount was never settled. I think it possible that the remissness was due to ill health and that Robert may have died soon afterwards as there is no mention of him in his father's will.

## BOOKS FOR THE BLIND

LAST year the National Institute for the Blind had at its disposal a sum of more than £200,000, of which £171,000 was contributed voluntarily by the general public. This made it possible to increase the number of embossed books, newspapers, and magazines for the blind in Braille or Moon type in spite of the fact that their production is very expensive. Many of the best sellers in fiction are now available to the blind as well as the works of authors such as Eddington, Jeans, and Keith. During the year over 15,000 bound volumes of Braille and over 17,000 Braille pamphlets were produced largely by the labour of blind workers themselves. Nearly half a million Braille newspapers were circulated and about half as many Braille magazines. There is a Braille edition of the *Radio Times* with a circulation of 3000 a week, but the blind are already asking for a bi-weekly newspaper which the Institute promises to initiate when sufficient funds are forthcoming. Braille literature is sold to the blind at one-third its cost price besides being available to them in their libraries. For blind students the Institute has established a lending library in which, besides standard books in Braille, there are a number of manuscript volumes—Braille copies of books sometimes asked for but not in general demand. These are the output of about 150 voluntary sighted workers, men and women themselves experts in Braille, who have this year between them transcribed as many as 975 large volumes—an example, as the report aptly remarks, of the finest form of voluntary service. There is also a manuscript music library for the use of blind musicians. A special committee has gone a good way towards making Sir Ian Fraser's ingenious idea of "talking books" available for the blind. People with good broadcasting voices have given their services freely and there are gramophone records of standard works and popular fiction, of which the library at present consists of 376 books and the committee have supplied 369 machines. Talking books are now being dispatched to borrowers at the rate of fifty a week. This new development was made possible by a gift from Lord Nuffield of £5000 for the purpose, and it was announced last Saturday that the same amount will be available for each of the next seven years. A gift of £500 a year for three years has also been made by the Carnegie trustees. It may be recalled that a talking book consists of ten or twelve 12-inch gramophone records, each side of which reads for 25 minutes. The execution of this beneficent scheme is probably the greatest boon conferred on the blind in our time.

## RHEUMATISM CAUSED BY DRUGS

RHEUMATISM following chemotherapy was the subject of an analytical survey in the *Presse Médicale* for June 27th by Tzanck, Layani, Sidi, and Klotz. In a thesis published in 1935, Madame Le Roy des Barres found 215 cases of this kind among 12,976 treated at the Fracastor dispensary of the Broca Hospital. Such chemical rheumatism seems to be almost confined to adults between the ages of 20 and 40, and to be more common in women than in men in the ratio of three to one. "Chemical rheumatism" may develop at any time in the course of a series of injections, and is apparently independent of the dosage of the drug. The interval between an injection and the development of articular pains may be as long as two or three days, but as a rule it is a matter of only three or four hours or even less; indeed, in some cases the injection has hardly been completed when the patient begins to complain of

lively pain in the joints. Any and every drug, it is stated, may under favourable conditions induce chemical rheumatism; not only bismuth, arsenic, mercury, and gold, but also the barbiturates, bromides, chloral, quinine, and Atophan may provoke it. The same drug may induce different rheumatic reactions in different patients, and conversely several drugs may give rise to the same clinical picture of chemical rheumatism, a characteristic feature of which is the absence of suppuration. The fact that some patients can go on taking the peccant drug with impunity after it has apparently provoked an attack of violent rheumatism may arouse doubts about the part it really plays in causation. The authors of the present study are inclined to regard the condition as a vasomotor disturbance involving the bony tissues.

## A GREAT FURTHERER OF LEARNING

THE present generation has taken much to heart the injunction to commemorate "our pious founders": and a volume on Hugh Oldham by Dr. Mumford [1] illustrates the ardour and persistence with which slight clues are pursued in order to bring to light the intentions and motives of the men who centuries ago had vision and foresight in their endeavour to benefit future generations.

Hugh Oldham, to whose munificence and enthusiasm for learning Manchester Grammar School owes its origin, was one of a large family, various members of which can be traced in the thirteenth, fourteenth, and fifteenth centuries. The family came originally from Oldham, in the south-east corner of Lancashire, but in the fifteenth century appears to have been firmly established in Manchester, which was then rising into prominence as a trading centre, and it was on Manchester that Hugh Oldham's benefactions were bestowed, when he had attained place, power, and wealth as Bishop of Exeter. He was not, according to one of his later biographers, learned, but "a great furtherer of learning." Manchester was not the only beneficiary of his enthusiasm: Durham College at Oxford, the precursor of the present Trinity College, where he may possibly have resided during his stay at Oxford, Corpus Christi, and Brasenose were among the recipients of his bounties. There is a story, quoted briefly by Dr. Mumford, that he had at one time the intention to do much for Exeter College in the same university, but for some unknown reason altered his plans. It is curious that all his benefactions were to Oxford, for though he originally studied there, he migrated to Cambridge to take his degree in civil and canon law.

Hugh Oldham was an example of the type of ecclesiastic who in the fifteenth century and earlier rose to a high position in the Church, not from any eminence in theological learning, or any outstanding merit as a priest or preacher. He appears to have spent nearly all his earlier life, until 1493, in what we regard as civil employment, largely concerned with legal matters and the management of the affairs of The Lady Margaret of Richmond, the mother of Henry the Seventh, and the generous benefactress of both Cambridge and Oxford, though in her case the bulk of her gifts went to Cambridge, possibly as Dr. Mumford suggests owing to the influence of John Fisher her friend and confessor. In her will she left Hugh Oldham a not inconsiderable legacy and the evidence of the legal documents which Dr. Mumford has studied so exhaustively shows that she had relied largely on his skill and legal training in the 20 years before her death in 1509. She had besides seen to his advancement and his first real ecclesiastical preferment to the Archdeaconry of Exeter was, Dr. Mumford thinks, probably due to her influence. "The first real ecclesiastical preferment" for though he had held, after the fashion of the time, numerous livings, prebendal stalls, and canonries, there is no evidence that he did more than draw the stipends and was probably never a resident in any of his benefices. When however he became archdeacon he at once began work in the diocese, and though he still continued to advise and act as agent for The Lady Margaret he threw himself into the many reforms which the diocese of Exeter so sorely needed. He was twelve years archdeacon, and then, again on the "representation of the Lady Margaret," was made Bishop of Exeter. It was after he had been twelve years bishop and seven years after the death of his patroness that he visited Manchester and completed the arrangements for the establishment and endowment of his chief monument, the Grammar School.

Dr. Mumford has made a pleasant story of Hugh Oldham's life, and though there is but little direct material, at any rate before he went to Exeter, he has so thoroughly explored all the documents likely to throw any light on the earlier years that he has succeeded in presenting a picture of Oldham's career which illustrates the life of a successful man of affairs in Tudor times. In our day he would have been an honoured and successful civil servant, but it is unlikely that he would either have acquired the wealth or the stimulus to serve future generations, had he not risen to eminence in a Church which for another half-century offered the highest rewards to talent and industry.

[1] Hugh Oldham, 1452 (?)–1519. By Alfred A. Mumford, M.D., Hon. Consulting Medical Officer to the Manchester Grammar School. London: Faber and Faber Ltd. 1936. Pp. 156. 6s.

## BRAZILIAN WORK ON LEPROSY

ON Sept. 19th we reviewed an issue of the *Indian Medical Journal* that had been specially devoted to leprosy, and it may be of interest to give some particulars of what is being done on similar lines on the other side of the world by the Brazilian Society of Leprology and the Sao Paulo Society of Leprology. These bodies publish a journal entirely devoted to the subject, the *Revista Brazileira de Leprologia*, and the June issue illustrates their activities. Villela, Castro, and J. V. D. Anderson, writing on lipæmia in leprosy, show that the total lipoids and fatty acids were increased in the blood of all the leprous patients they examined, whereas the cholesterol and iodine values were diminished. Neither the form of the disease nor any treatment of it made any difference to the lipæmia. Lepers of white races showed higher lipoid values than those of other races. Their conclusions differ from those of Paras of the Philippines, who found decrease of total lipoids and fatty acids, both in cases treated with chaulmoogra and in cases not treated; though there was a low blood cholesterol in untreated cases it rose to normal in cases treated with chaulmoogra.—Rabello writes on "sarcoid of Boeck of leprosy origin." The illustrations, however, depict what is typical of tuberculoid leprosy, one of the commonest forms of this disease, and he contends that the existence of sarcoid disease due to a special virus is highly problematical.—Pereira and H. H. Anderson record the results of examining gastric acidity in 55 patients with leprosy of mixed type. Of these 10 showed anacidity and achylia. From this, and from reports of altered function of spleen and liver and lipoid metabolism, they conclude that "leprosy is a generalised infection involving the viscera as well as peripheral tissues." While there is no doubt that in many cases the internal viscera are involved, it is remarkable how little the function of these organs is directly affected by the presence of *Bacillus leprœ*. Functional disturbances are much more often due to tissue degeneration: and this is the result of trophic ulcers and mixed infections secondary to neural involvement or to ulceration of nodules.—A careful clinical and histological study is made by V. Grieco of a case of nerve leprosy in which a double nerve abscess resulted in the formation of two chronic ulcers. The musculocutaneous nerve of the right foot was involved and there was also a macule of the dorsum of the foot in the area of distribution of this nerve. The entire macule and nerve were dissected out and examined histologically in serial sections. He refers to the frequency of leprous nerve abscess in India and

other countries.—L. M. Bechelli refers to the frequency of splenomegaly in leprosy (39 per cent. of 476 cases examined).—L. Baptista describes the treatment of seven leprous patients suffering from excruciating pains especially of the arms and legs. After trying every known remedy, including tartar emetic, Gypsocol, Biostenyl, calcium chloride, benzoate of sodium, methylene-blue, atropine, and mercurochrome, without success, permanent relief was obtained in four cases from three daily injections of histidine. In a fifth case there was recurrence which was permanently relieved by another three injections. In the other two cases the benefit was nil.—A. R. de Souza deals with painful nodules of the ear.

The interest which the medical profession in Brazil is taking in at least the technical side of leprosy, one of the most serious medical problems in their country, is well shown by this excellent series of articles.

## FAMILIAL ALLERGY

THAT allergic manifestations are often familial is well recognised, and E. Moracci is able to quote many previous publications on the subject. His own communication (Rass. di terap. e patol. clin., 1936, viii., 449) concerns a family in which sensitiveness to butter and cheese, even in minute quantities, has appeared in five successive generations. The allergic reaction took the form of violent gastro-intestinal disturbances appearing soon after either butter or cheese had been ingested. Of the 145 individuals composing the family, 17 (9 males and 8 females) were affected, while 18 (12 males and 6 females) had transmitted the condition to their descendants without being themselves affected. In Moracci's opinion the factor responsible in these cases is a recessive one. This view, however, presupposes the existence either of a large number of other families similarly affected or of related marriages in the family itself. No evidence of such intermarriage is given.

## CHILDREN'S SUICIDES

UNDER the inspiration of Prof. Wimmer of the psychiatric department of the Rigshospital in Copenhagen, Sarah Kielberg has made an inquiry into the causes of suicide in childhood (Nord. med. tidskr., July 25th, 1936, p. 1193). Information was collected from the Danish death certificates for 1896–1915 and 1920–34, the registrations for 1916–20 being unsuitable for statistical research. The 96 suicides recorded were those of children between the ages of 9 and 14, the boys outnumbering the girls by six to one. As many as 70 were suicides by hanging, but only 1 of these children was a girl. On the other hand, of 19 who drowned themselves 13 were girls. The 3 children who shot themselves, the 2 who were driven over by a train, the 1 who was gassed, and the 1 who died of an unknown cause were all boys. There was not a single case of poisoning by drugs, presumably because it is difficult in Denmark for children to secure poisons, and because the slow accumulation of small quantities of a drug till enough is available for a fatal dose entails a continuity of purpose incompatible with the April weather of a child's mind. The age-incidence of the suicides showed a steady rise from 2 at the age of nine to 42 at the age of fourteen. Two of the fourteen-year-old girls committed suicide because of frustrated love affairs. A classification of the supposed causes of the suicides put fear at the head of the list with 28. Depression came next with 21, then unknown causes with 20, repentance with 12, and anger with 11. About a third of all the children were mentally or bodily defective or came from families marked by mental disease. As many as 78 of the 96 lived in the country where conditions predisposing to suicide are more liable to be overlooked and ignored than in a town. The decline in the frequency of children's suicides in Denmark in the period under review coincides with a decline in the incidence of adult suicides, though it is probable that the causes for the two declines are not identical. The waning abuse of alcohol and the growing welfare of old folk may well have reduced the frequency of suicides in adults but cannot, of course, have played any part in the suicides of childhood which, in their turn, may have dwindled in frequency with improvement in the conditions under which children, especially waifs and strays, now live.

## LIBRARY CLASSIFICATION

To provide a guide to the literature in the Science Library at South Kensington is the principal object of a little book recently issued.[1] The whole of knowledge is treated in outline, with Groups 5 and 6 (Pure and Applied Science) more fully developed than the rest. The most complete sections are, as might be expected, those on engineering and chemical technology. Medicine itself occupies only 3½ of the 75 odd pages, and of these hygiene and public health take up a good half. Pathology and the surgical sciences are not adequately developed in this classification for the purposes of a special medical library, but with translations of new sections from the French appearing from time to time, it should not be long before the special librarian will have here as good a ready made classification as he could hope to devise himself. Even the system in use in the London School of Hygiene (see THE LANCET, 1936, i., 961) has comparative disadvantages. The work here reviewed has an excellent index of some 5000 specific entries, while for those interested, the introduction offers a clear explanation of the important Universal Decimal system of classification.

## RECREATIVE PHYSICAL TRAINING

THE first report, covering a period of fourteen months up to the end of August last, has been issued of the Central Council of Recreative Physical Training. This council, initiated in 1935 by the Ling Association of teachers of Swedish gymnastics and the National Association of organisers of physical education, includes representatives of all the national organisations dealing solely with physical training, along with those of some interested organisations and a number of individual members, among whom are at least a dozen medical men and women. The executive committee includes the names of Sir Henry Brackenbury, Dame Janet Campbell, and Sir George Newman. The council began its work by making a survey of voluntary recreative work in the British Isles and found, as was unfortunately to be expected, that the work both of voluntary organisations and of local authorities is nearly all hampered by shortage of leaders and lack of facilities. The work of the council itself has been limited by its means, chiefly because, in deference to the wishes of King George's Jubilee Trust, it abandoned its intention of launching a public appeal for funds. Apart from its coördinating function, which has been productive of much good behind the scenes, its concrete achievement has been the preparation of a national register available for all who need leaders in any form of activity, and a small but successful camp held at Stapleford Abbotts, Essex, last August for training men leaders, at which Dr. F. W. Griffin acted as commandant. The council is now in a position to offer an advisory visit to any voluntary organisation that is planning organised physical recreation or training leaders for the purpose; but when means are available there are schemes in hand for a permanent centre where leaders can be trained, for working out a national test for such leaders, and for investigating the type of training most suitable at various periods of life. The council has for the present accepted accommodation at the offices of the National Playing Fields Association, 71, Eccleston-square, London, S.W.1.

[1] Classification for Works on Pure and Applied Science in the Science Museum Library. Third edition. From the Science Museum, South Kensington. London: His Majesty's Stationery Office. 1936. Pp. 130. 5s.